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PURULENT BRONCHITIS COMPLICATING MEASLES AND RUBELLA.

BY

TEMP. LIEUT.-COLONEL W. M. MACDONALD, B.Sc., M.D., M.R.C.P., N.Z.M.C.,
CONSULTING PHYSICIAN NEW ZEALAND EXPEDITIONARY FORCE;

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PATHOLOGIST — NEW ZEALAND GENERAL HOSPITAL;

LIEUTENANT J. C. FOX, M.R.C.S., R.A.M.C.;
AND
P. BRUCE WHITE, B.Sc.,
PATHOLOGIST TIDWORTH MILITARY HOSPITAL.

THIS epidemic of exanthematous disease complicated by purulent infection of the bronchi attacked several hundred men belonging to a recent draft from New Zealand; 418 cases of measles and rubella occurred between January 1st and March 8th, 1918. In the large majority there was a copious frothy or muco-purulent bronchorrhoea, in 75 of them there was a severe purulent bronchitis, and of these 26 died. If we take into consideration only the definite cases of septicaemic bronchitis the mortality amounted to one-third of the men attacked, but, as practically all the cases showed signs of a much more severe bronchial catarrh than ordinarily occurs in measles, and as the sputa in these cases contained the same organisms as in the more severe ones, it seems reasonable to regard them all as cases of multiple infection, and, by doing so, to reduce the mortality to about 7 per cent.

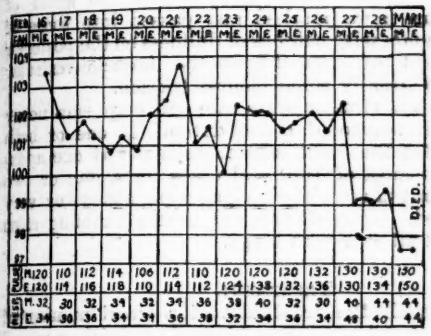

CHART 1.—Case 44. Rubella and bronchitis.

We retain the name "purulent bronchitis" as bronchitis with purulent expectoration was common to all the cases, but the severe type consisted rather of a septicaemia accompanied by various lung lesions which were not constant but ranged from bronchial catarrh to broncho-pneumonia, pleurisy, basal congestion, or lobar pneumonia. No one of these types could be said to prevail, but the serious cases which lived long enough passed through all these phases in succession, although they usually died before definite lobar pneumonia was well established.

There seems little doubt that the original infection occurred at an American port where the transports touched, as they had been free from infectious disease during the voyage, but measles and rubella broke out on board two of them just before arrival in England—that is, some fourteen days after leaving America. In the first five days after arrival at Sling Camp 77 cases developed, and thereafter the incidence was: Week ending January 19th, 60; January 26th, 125; February 2nd, 113; February 9th, 43; February 16th, 25.

During the same period 401 men suffering from febrile respiratory affections were admitted to the observation wards Sling Camp. These cases consisted largely of coryza or febricula, and 303 of them were described as "clinical influenza." It is noteworthy that none of these men developed purulent bronchitis, although most of them were respiratory cases, and had been living in the same huts as the measles and rubella cases. The complication of purulent bronchitis was limited strictly to cases of measles and rubella and to one case of scarlet fever.

Several organisms were recovered from the sputa and from the blood, and the virulence of the epidemic seems to be best explained by a symbiosis between one or more of these germs and the organisms of measles and rubella. If, as has been suggested in previous epidemics, the cause had been a symbiosis of the influenza bacillus with a pneumococcus or streptococcus, then we would certainly have expected to find some purulent bronchitis among 303 cases of clinical influenza which remained at Sling. But no single case of such a combination occurred.

Nor, again, did any purulent bronchitis arise among the 146 cases of measles and rubella occurring among British troops in the same district and at the same time, except in the case of a British motor driver who had been employed in transporting the New Zealand cases. Purulent bronchitis has only lately been clearly described and our knowledge of it is still in the mobile stage. It is undoubtedly much more widespread than is generally known. Thus, an officer (B.E.F.) died at Tidworth in February from bronchitis following some minor surgical intervention, and his lungs were found at the autopsy to show the same lesions as the cases dying from purulent bronchitis.

Further, three typical cases of purulent bronchitis complicating measles occurred in other New Zealand troops about the same time — one at Christchurch and two at Brockenhurst. These men had never associated with the draft at Sling, and they all recovered. It seems fairly certain, then, that purulent bronchitis is a condition in which there is a definite symptom-complex resulting from a multiple pulmonary infection, but that the actual germs affecting this symbiosis are subject to variation. This does not necessarily lessen the stability of purulent bronchitis as a clinico-pathological entity, but seems rather to place it in the category of such conditions as haemolytic jaundice, pernicious anaemia, Banti's disease, typhoid and malignant neoplasm, in all of which a definite clinico-pathological condition is recognized as being of varied and multiple origin.

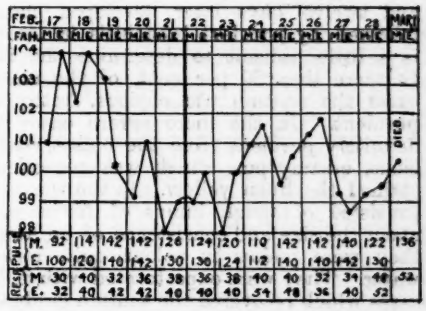

CHART 2.—Case 19. Measles and bronchitis.

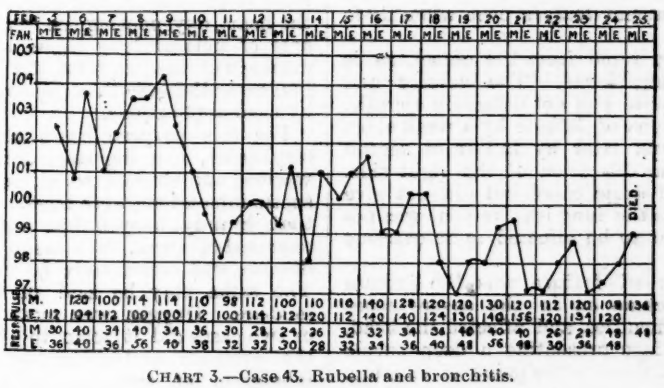

CHART 3.—Case 43. Rubella and bronchitis.

CLINICAL COURSE.

In most cases the onset was that of an ordinary cold, but in a few it was more sudden and accompanied by a slight rigor. In others there had been a bronchial or nasal catarrh for a week or longer, while in a few cases the men complained of having had a severe cough or sore throat for a month or so beforehand. Headache and pain behind the eyes were common features, and in a few cases there was profuse sweating.

Temperature.—The temperature was usually high at the outset, 103° or 104°, and in the lighter cases it dropped by lysis in a few days. In the severe cases it followed no definite course and presented the curve sometimes of continued fever (Chart 1), but more often of an irregularly remittent or even intermittent type (Chart 2). There was frequently an *ante-mortem* fall of temperature in the twenty-four or thirty-six hours before death (Chart 1), while some of the worst cases followed an almost apyretic course, and some reached the worst phase after the temperature had been down for several days (Chart 3).

In no case could a falling temperature be taken as a guarantee of approaching safety.

Rash.—The eruption was morbilliform in 125 cases, in 290 it clearly resembled in appearance and distribution that of rubella, while in 3 it was scarlatiniform. In many of the cases Koplik's spots were present, and in 2 the rash became petechial. A marked feature was the frequent development of a secondary, and in one case a tertiary, rash. These later rashes developed about three or four days after the primary one had died down, and appeared mostly on the trunk and on the proximal portions of the limbs. They consisted chiefly of reddish maculae, and were probably of septic origin, as they could not be ascribed to any factor employed in treatment. Two patients developed measles and two others scarlet fever during convalescence from rubella.

Expectoration.—With very few exceptions the measles and rubella cases had purulent expectoration, but about 10 per cent. of these cases never became really ill. Usually the sputum became definitely purulent just about the time the rash came out or a day or two later. In four cases the original infection was so mild that the patients were sent on to the convalescent hospital at Perham Downs. Later they developed purulent bronchitis, which in these cases may be regarded as a secondary infection. This occurred respectively on the fifth, seventh, twelfth, and fourteenth days after the appearance of the rash. The last case, however, had been admitted with rubella and twelve days later developed measles which was followed by purulent bronchitis in two days, so that it is a little difficult to determine the incubation period. In more than 90 per cent. of the measles and rubella cases the sputum was copious, frothy, and later mucopurulent. In the more severe cases the sputum was definitely purulent from the outset, consisting of a tenacious, creamy pus, which was not offensive, and which stained the linen yellow. In the worst cases the sputum consisted of tough lumps of fibrino-purulent material, about the size and consistence of an American oyster, but they were yellow in colour, quite airless, and sank in water. They were expectorated with difficulty, and in the cases which recovered the sputum gradually became looser and freer, but persisted for many days after the temperature had fallen to normal. In the unfavourable cases expectoration ceased some twenty-four or thirty-six hours before death, and the bronchi became filled with pus. In a few cases the sputum was rusty, in a few streaked with blood, while one or two had definite haemoptysis or epistaxis.

Cough, Respirations, etc.—The cough was frequently hacking and persistent. Usually there was a marked tachypnoea from the outset without much distress, and this was increased by the slightest exertion, such as turning over in bed. Orthopnoea was rare, and most of the patients felt easier when the head was low. Painful respiration was not a prominent feature even when there was well marked pleurisy.

Pulse.—This was usually rapid from the outset, as is seen in the accompanying charts. The volume and tension were low, but the pulse was not definitely dicrotic. The heart showed early signs of fatigue by a weak short first sound at the apex, and later by failure of second sound at the base and some dilatation of the right side. Cupping was resorted to in some cases, but did not give marked relief. Even where the lung involvement was not extensive, the heart seemed to be affected in an extreme degree by the toxaemia.

Lividity.—One very marked feature was the intense degree of lividity. This came on in the severe cases before the heart was in difficulties, and affected the head, ears, face, and trunk, the face presenting a deep purple appearance as if the patient were on the point of choking, but there was no distress. Only two cases which presented this feature recovered.

Throat, etc.—In the severe cases there was usually a very dirty condition of the mouth and throat, and the tongue became dry, brown, and covered with sordes. A well-marked laryngitis causing dysphonia or complete aphonia was present in about 80 per cent. of the cases.

Abdomen.—Gastro-intestinal symptoms were uncommon, and vomiting was rarely troublesome.

Nervous System.—This was usually affected early and deeply, as shown by intense prostration, some degree of ataxia of the hands, and later by marked subsultus tendinum, muttering delirium or mental depression with suicidal tendency. One patient did commit suicide by cutting his throat. Incontinence of faeces and urine was a terminal symptom, while in some cases there was retention of urine at an earlier stage. The early and marked mental depression was undoubtedly a factor which contributed to the fatal issue in many cases.

Toxaemia.—Albuminuria was rare and when present was slight. The blood count showed no very marked peculiarities. The spleen was usually not definitely enlarged. As the condition was undoubtedly a septicaemic one, these points are rather surprising. A very definite mousy odour, such as one finds in typhus, was present in most of the fatal cases.

Complications and Sequelae.—Conjunctivitis occurred in some cases and in a few was purulent. Two cases developed otitis media and two had thrombosis affecting one leg.

Physical Signs.

The most striking feature of the physical examination in the early stages was the absence of signs suggesting a marked or extensive involvement of the lung tissue in patients who presented all the clinical features of a severe pneumonia. In the mild cases the breath sounds were harsh and were accompanied by some sharp or sonorous rhonchi and by a few medium crepitations at the base of the lungs. In the more severe cases the signs of bronchitis were more marked and passed into those of bronchopneumonia with patches of dullness on the posterior aspect, deficient or, less frequently, broncho-vesicular breathing, and usually some pleural friction.

Signs of pleural effusion were rare and empyema never supervened. Evidence of consolidation (at one or both bases, more often the right, and occasionally at one apex) was present in most of the fatal cases for a day or two before death, but in some these signs were absent or very slightly marked. Towards the end coarse bubbling râles could be heard all over both lungs.

TREATMENT.

In dealing with the treatment of a small number of cases such as this it is not possible to do more than record the facts noted, as following the different lines of treatment, and point out certain indications of success, which must be interpreted according to the faith of the individual. The difficulty of arriving at a definite conclusion is enhanced by the fact that the cases were admitted for treatment at various stages of the pulmonary complication, the date of admission being dependent on the appearance of a rash which was not always coincident with the onset of the pulmonary symptoms.

Drugs.

The use of drugs was confined to symptomatic treatment in the way of combating the great strain involved on the heart, oxygenating the lungs, and so aiding the reduced area of normal lung tissue in its functions, helping the drainage of the pus from the lungs by expectoration, and hindering the growth of pyogenic organisms in the lungs by local applications.

For this purpose heart stimulants such as brandy, strychnine, and digitalis, ammonium carbonate, oxygen warmed and alcoholized, stimulant expectorants, and antiseptic inhalations were tried. Of these, it is enough to say that brandy, strychnine, and digitalis had the effect expected of them, but none on the general course of the disease, and can merely be classed as useful adjuvants. The same may be said of the stimulant expectorant mixture. Oxygen was most disappointing; in only one or two cases did it seem to give even transitory relief to the cyanosis and distressed breathing. Whether the inhalation of antiseptic vapours had any effect it is impossible to say.

Vaccines.

Three different vaccines were used, and in view of the later bacteriological findings it must be noted that no one of these three included all the organisms which appear to be responsible for the clinical symptoms.

Vaccines Used.

A. A mixed stock vaccine, obtained from Captain Eagleton, R.A.M.C., bacteriologist at Sutton Veny, consisting of 1·25 million Pfeiffer's bacillus and 250 million Friedländer's bacillus per cubic centimetre. This vaccine had been prepared under

instructions from command head quarters in anticipation of possible outbreaks of purulent bronchitis.

B. A vaccine prepared from cultures obtained from the blood and pericardial fluid of cases in the epidemic under consideration, consisting of two preparations containing (*a*) *Streptococcus lanceolatus* and (*b*) *Streptococcus pyogenes longus*.

C. A vaccine prepared from the sputum of one case in this epidemic, consisting of two preparations, containing (*a*) *Staphylococcus aureus* and (*b*) pneumococcus, streptococcus, and a Gram-negative bacillus.

A number of cases were treated with vaccine A alone. Most of these had this vaccine within one or two days of the appearance of the measles rash, and the course of these cases was on the whole satisfactory.

Only six cases were treated with vaccine B alone, and results were not satisfactory, as it was tried rather late in the course of the disease and only in very serious cases.

Seven cases were treated with both vaccines A and B, with satisfactory results in five cases.

Three cases were treated with vaccine C only, and these may be eliminated as inconclusive, as in these one had his first dose of vaccine twenty-four hours before death on the seventh day of disease, when past all reasonable hope of recovery, the second had his first dose forty-eight hours before death on the fifth day of the disease, and although there was a marked fall of temperature, the general and pulmonary condition was such as to preclude recovery.

Dosage.

Vaccine A was given always in doses of 300 million Pfeiffer's and 60 million Freidländer's with an interval of four days before a second dose. There was never any untoward reaction.

Vaccine B was given in most cases in doses of 25 million *Streptococcus lanceolatus* and 25 million *Streptococcus pyogenes*, though in a few the dose was increased to 125 million *Streptococcus lanceolatus* and 33 million *Streptococcus pyogenes*. No untoward results were experienced from these doses.

Results.

Of 36 cases treated with vaccine, 10 died, giving death-rate of 27 per cent.

Of 25 cases untreated with vaccine, 16 died, giving death-rate of 64 per cent.

Of 20 cases treated with vaccine A alone, 3 died, giving death-rate of 15 per cent.

Of 6 cases treated with vaccine B alone, 4 died, giving death-rate of 66.6 per cent.

Of 7 cases treated with vaccine A and B, 2 died, giving death-rate of 28.4 per cent.

Apart from statistical results we had the general impression that vaccine therapy had a good effect, whilst drug treatment was only of use as an assistant in combating special symptoms, that any treatment to be of use must be begun as early as possible, and that the recoveries after vaccine treatment had a more rapid convalescence than those untreated with vaccine. The good results of the vaccine were seen in an improved general condition rather than in the rapid subsidence of any special symptoms.

Ribadeau-Dumas and Brissaud have recently published (*Bulletin de la Société Médicale des Hôpitaux*, February 15th, 1918) an account of two cases of malignant measles occurring in Arab soldiers, and they mention casually that the sputum was purulent. The first case died, but the second was given intravenous injections of citrated blood from a measles patient who was convalescent, and he showed immediate improvement, and ultimately recovered. Several patients suffering from purulent bronchitis have since been treated with injections of polyvalent streptococcal serum at No. 3 New Zealand General Hospital, and all but one recovered.

General Treatment.

The cases were nursed in roomy, well-ventilated wards, and, although the weather was cold, it was considered that, in an obviously septic condition, fresh air was of more importance than warmth, and therefore the windows were always kept well open.

In a few cases with irritating and exhausting cough a steam tent was used.

Typical Cases Treated with Vaccine.

CASE 10. (Typical of eleven cases.)

On February 17th, 1918, the patient's condition was as follows: Looked very ill and was cyanosed; lungs full of wheezing rhonchi; sputum airless and purulent. On February 18th condition was unchanged; vaccine given. On February 20th general condition was much better, and though the lung symptoms only cleared up slowly, there was no further anxiety about the case.

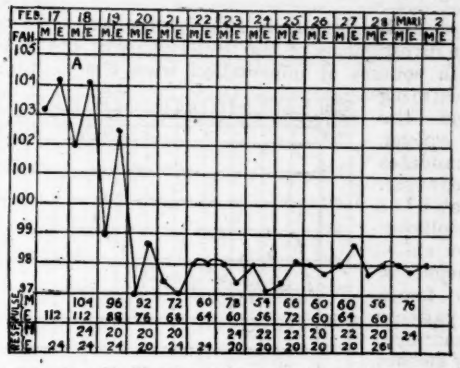

CHART 4.—Case 10. Measles and purulent bronchitis; recovery. A, Vaccine A.

CASE 8. (Typical of four cases.)

In this case, on the day a dose of vaccine A was given there was bronchitis with purulent sputum and cyanosis. Prognosis was not good. After the vaccine there was a rapid fall in temperature, and though five days later there was return of pyrexia the general condition was much improved and never afterwards went back.

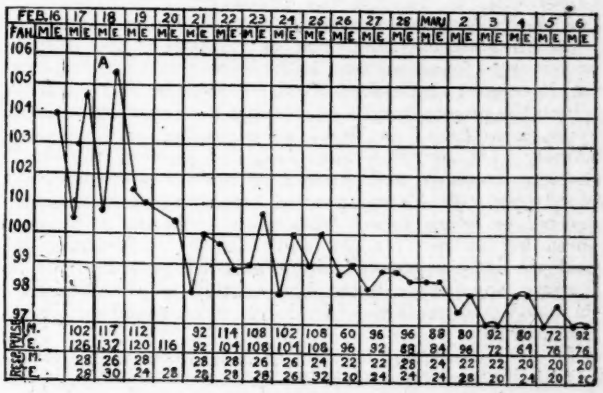

CHART 5.—Case 8. Measles and purulent bronchitis; recovery. A, Vaccine A.

CASE 7. (Typical of three cases.)

On February 14th, 1918, the patient looked very ill; was very cyanotic; lungs full of scattered rhonchi; sputum purulent and nummular. On the 16th the patient was worse, and a dose of vaccine was given. On the 18th the patient was no better with the exception of a fall in temperature. On the 19th the cyanosis was less, though lung signs were more advanced with signs of commencing consolidation at right base. On February

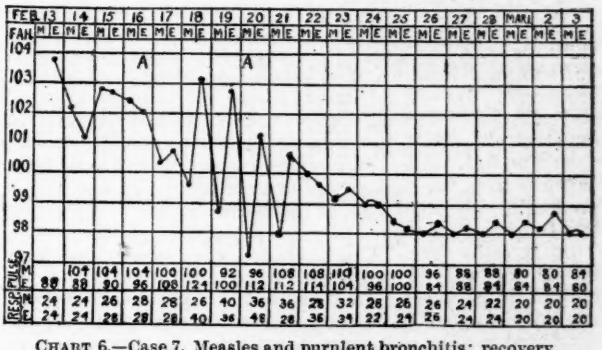

CHART 6.—Case 7. Measles and purulent bronchitis; recovery. A, Vaccine A.

20th another dose of vaccine was given. On the 21st the temperature continued to fall, the lungs to clear up, and respiration to become easier, and by next day there was no further cause for anxiety.

CASE 27. (Typical of two cases.)

On February 16th, 1918, there were signs of purulent bronchitis; some cyanosis, rhonchi throughout lungs, and purulent sputum. February 17th, vaccine A given; general condition improved up to the 23rd, when the cyanosis became more marked and pulse was not good. February 24th, given a

dose of B vaccine containing 200 million *Streptococcus lanceolatus* and 25 million *S. pyogenes longus*. From February 25th onwards progress was rapid, the lungs clearing up rapidly from the grosser signs of disease.

BACTERIOLOGY AND PATHOLOGY.

In the investigation of the bacteriology of the condition the main sources of information were the sputum and blood during life and the blood, spleen, and exudates *post mortem*. The results were as follows:

1. *Sputum.*—Specimens of sputum from forty patients were examined, both by smears and cultures. The organisms most constantly present were streptococci, *Staphylococcus aureus*, and *B. influenzae*. Among other organisms less frequently met with were *Micrococcus catarrhalis*, *B. fusiformis*, diphtheria bacilli, pneumococcus, *Diplococcus crassus*, and *Staphylococcus albus*.

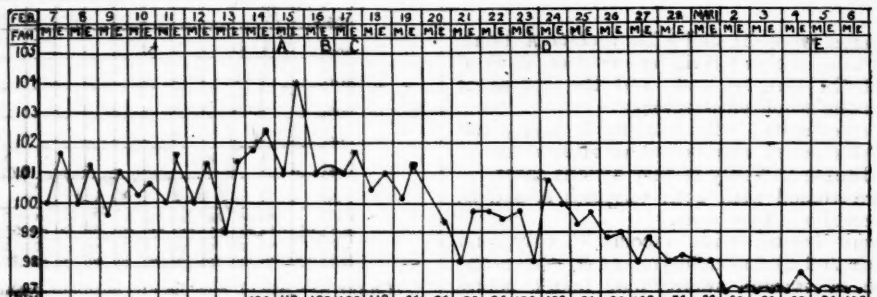

CHART 7.—Case 27. Measles and purulent bronchitis; recovery. A, Rash developed; B, lung symptoms developed; C, vaccine A; D, vaccine B; E, patient got up.

(*a*) *Streptococci.*—One or more varieties of the streptococcus were found present, both in smears and in cultures, in all cases examined, with the exception of two, from which the pneumococcus was isolated. Two streptococcal types were found to be of very constant occurrence—namely (1) *Streptococcus longus*, growing in small discrete colonies and producing active haemolysis on blood agar. (2) A streptococcus usually assuming a diplococcoid or *brevis* form. This grew in flattened colonies, spreading at the margin and showing a tendency to coalesce into a greasy-looking greenish-grey film when densely sown. Its haemolytic action was small, and on blood medium it was found to be surrounded by a faint greenish halo.

(*b*) *Pneumococcus.*—In the two cases in which we failed to isolate streptococci from the sputum the pneumococcus was obtained in culture. In one of these cases, as mice were not available at the time, we were forced to rely upon the fermentation of inulin and the capsule stain of His in making the diagnosis. In the other case, examined during convalescence, smears of the sputum showed the presence of large numbers of Gram-positive capsulated lanceolate diplococci and numerous influenza bacilli. On culture media (trypagar + citrated human blood) a practically pure growth of these two organisms was obtained. A mouse which was inoculated with the mixed culture died in twenty-eight hours, and spleen smears showed the presence of Gram-positive capsulated lanceolate diplococci. Cultures from the spleen were made and the pneumococcus and a minute Gram-negative bacillus, probably *B. influenzae*, recovered. In several cases where preliminary cultural and microscopical features had been suggested, inoculation experiments proved the organism to be the streptococcus.

(*c*) *Staphylococci.*—*Staphylococcus aureus* was present in cultures from the majority of cases, often being one of the predominating organisms of the sputal flora. *S. albus* was less frequently found.

(*d*) *B. influenzae.*—This organism was present in smears in 24 of the 40 sputa examined and was grown in culture in 21 cases. In 8 cases it was present in smears, but failed to grow in culture, and in 5 cases where it was not found in smears it grew in cultures. It was therefore present either in smears or cultures, or both, in 29 of the 40 cases examined.

Summary of Results of Examination of Sputum.

Organism.	Frequency per 40 Cases.	Frequency per Cent.
B. influenzae	29	72.5
Streptococcus	38	95.0
Pneumococcus	2	5.0
Staphylococcus aureus	27	67.5

2. *Blood Cultures.*—Careful investigation of organisms isolated from the blood of several patients during life showed that streptococci were almost exclusively and constantly present. In only one case was the pneumococcus demonstrated with any degree of certainty. The streptococci isolated seemed to coincide, in their appearance on culture media, with the two forms described as most uniformly occurring in the sputum.

3. *Additional Investigations during Life.*—A number of throat swabs were examined, and from most of these the streptococcus and the *Staphylococcus aureus* grew abundantly on culture media. In one case the Klebs-Loeffler bacillus was isolated. In two cases the streptococcus was found in the aural discharge from patients suffering from otitis media.

4. *Blood Counts.*—The blood count of patients suffering from this disease gave rather unexpected results. In place of the marked leucocytosis to be expected in the presence of a bacteriaemia, the typical count seemed to be between 8,000 and 12,000 per cubic millimetre. On the whole the differential count registered the septicaemia more definitely, though the relative polymorphonuclear leucocytosis appears below what might be reasonably expected.

Differential Count in Seven Cases.

Case.	Polymorphs.	Mononuclears.	Large Lymphocytes.	Small Lymphocytes.	Remarks.
34	78.0	1.0	2.0	19.0	Died.
35	87.0	1.5	2.5	15.0	Died.
7	74.5	2.0	1.0	22.5	Recovered.
36	77.0	3.0	2.0	18.0	Recovered.
37	69.0	3.5	2.5	25.0	Recovered.
38	75.0	3.0	2.0	20.0	Recovered.
39	83.0	—	1.0	16.0	Died.

5. *Bacteriological Examination of Material obtained post mortem.*—Twelve cases were investigated *post mortem*. The cultures made from the bronchial discharges showed the same disparity as in the case of the sputa. The majority were typically streptococcal, though *Staphylococcus aureus* was present in several cases. In two cases only was *B. influenzae* isolated in pure culture, though smears of the secretions were sometimes suspicious. On the other hand, this organism could not be found either in the smears or cultures made soon after death in certain carefully studied cases. In addition to one or more of the organisms mentioned the bronchial secretion yielded a growth of the pneumococcus in three cases and of Gram-positive cocci in other three. Cultures from the blood, spleen, and pericardial fluid yielded uniformly a mixed growth of the two types of streptococci already described; sometimes one type appeared to predominate, sometimes the other. The heart blood and pericardial fluid in one case (No. 24), in addition to streptococcus and staphylococcus, yielded a Gram-positive bacillus and a Gram-positive coccus. Smears of the fibrinous exudate of Case 40 showed a capsulated diplococcus, streptococcus, and a Gram-positive coccus. Inulin-fermenting organisms of the pneumococcus type could be shown in two cases only. In two cases *Staphylococcus aureus* was encountered in the pericardial fluid.

INOCULATION EXPERIMENTS.

The study of the pathogenicity of the organisms associated with the disease has been mainly restricted to those isolated from the blood and organs at autopsy.

Streptococci from the spleen, pericardial fluid, and blood have been shown to be lethal to mice in moderate doses. In the case of both the streptococcal types already mentioned death occurred four to six days after injection. The organisms were recovered from the blood and spleen after death, and were found in abundance at the point of injection, where an accumulation of pus occurred.

On several occasions attempts were made to demonstrate the pneumococcus by injection into mice. Either results were negative or the suspicious organism proved to be streptococcus, except in one case, already referred to, where the pneumococcus and a minute Gram-negative bacillus were recovered from the spleen.

Post-mortem Conditions.

As the conditions found *post mortem* varied considerably, it is difficult to describe any particular state as typical. It seems probable, however, that there is a definite sequence of pathological changes. This sequence of events is not apparently conditioned by the duration of the disease, and a fatal termination may ensue at any stage of the series. This was particularly noticeable in the case of the lungs, where more advanced changes were found in some cases of short duration than in others where death occurred after an illness lasting fourteen to twenty-one days.

Summary of Main Pathological Findings.

1. *Pleura.*—In the majority of cases a greater or lesser degree of fibrinous or sero-fibrinous pleurisy was present; in three cases the adhesions were very extensive. As a rule the accumulation of fluid was very small. The condition was usually more marked on the right side.

2. *Lungs and Bronchi.*—A constant feature was the presence of petechiae on the lung surface, most marked towards the base and along the interlobar fissures. As already mentioned, the conditions found varied considerably, but the differences were apparently a series of phases in the course of the disease, varying from typical purulent bronchitis with slight basal bronchopneumonia to complete lobar consolidation. In the advanced cases the following conditions were usually found in basifugal succession:

(1) A basal consolidation.
(2) A zone of slightly aërated lung intermediate between lobar pneumonia and bronchopneumonia.
(3) A belt of bronchopneumonia. This was usually found in the lower portions of the upper lobes.
(4) A belt in which minute elements of consolidation around the bronchi were closely dotted over the congested and oedematous lung.
(5) An upper region of simple bronchitis.

The above must be qualified by the statement that in a few cases apical consolidation was present, and in most the anterior margin of the lungs and the middle lobe of the right lung were relatively unaffected. The state of the right lung was usually more advanced than that of the left. Patches of interstitial emphysema and small haematomata were encountered from time to time, and in one case multiple abscesses, about the size of half a crown, in cross section, were found in the consolidated lower lobes. The bronchi were in all cases acutely inflamed. The secretion varied considerably from case to case. In a few the bronchi contained a chocolate-coloured froth, interrupted here and there by plugs of yellow pus, but in the majority of cases the lumina of the bronchi were occupied by a yellow purulent discharge, which poured from the larger bronchi when they were severed. The bronchial glands were uniformly enlarged.

3. *Heart.*—In six of the fourteen cases examined there was marked sero-fibrinous pericarditis—the fluid either faintly turbid or flecked with fibrin. Fibrinous patches were most frequently found on the apex anteriorly and round the base. In several cases the right heart was dilated, and was usually gorged with clot.

4. *Spleen.*—In only four cases was the spleen found to be enlarged and pulpy. In the majority this organ was fairly normal in size and consistency, showing at most a tendency to become flattened. In view of the bacteriological findings already discussed, this is somewhat remarkable.

Summary of Results.

Organ.	Condition Present.	No. of Cases.	Per Cent.
Lungs	Purulent bronchitis and slight bronchopneumonia	3	21
	Purulent bronchitis and advanced bronchopneumonia	5	36
	Purulent bronchitis, bronchopneumonia, and lobar pneumonia	6	43
Pleura	Pleurisy	12	86
Pericardium ...	Pericarditis	6	43
Heart	Dilated	5	36
Aorta	Aortitis of ascending aorta	6	43
Spleen	Enlarged and pulpy	4	29
	Approximately normal	8	57
	Slightly fibrotic	2	14

Histology.

There is little to say regarding the morbid histology of the condition, for, apart from the lungs, there were but small signs of inflammatory change.

While sections cut from the more gravely affected lung tissues show the typical appearances of bronchopneumonia and lobar pneumonia some interest attaches to those which demonstrate the transition from a state of simple bronchitis to one in which the alveoli are involved.

This process commences with a marked infiltration of the peribronchiolar tissue by cells of the small round type, in a manner identical with that described by the Aldershot observers. The zone of inflammation extends to the surrounding tissue, and consolidation of the alveoli immediately adjacent to the pus-filled bronchioles ensues. The round cell infiltration is transient, and is soon replaced by one in which polymorphonuclear cells predominate. At this stage the microscopical picture is somewhat characteristic, showing numerous elementary consolidations about the bronchioles scattered over approximately normal lung tissues.

In a certain number of the cases examined *post mortem* there was little advance upon this condition; in others, however, the primary consolidations were found to extend and coalesce until their individuality was lost in bronchopneumonic patches.

Of other lesions of which microscopical evidence was obtained note may be made of a small amount of cloudy swelling in the kidney and a more or less marked congestion of the spleen, accompanied in some cases by small haemorrhages.

Concluding Remarks on the Pathology and Bacteriology.

In view of the complex nature of the infection it is somewhat difficult to sift out the essential pathogens from those of subsidiary or individual importance.

The outstanding feature from this point of view is undoubtedly the almost universal association of measles and rubella with a streptococcal bronchitis and septicaemia. We have been much occupied by the question as to whether there was a direct symbiosis between the virus of measles and the streptococcus, enhancing the virulence of the latter and lowering the resistance of the host, or whether the symbiosis was an indirect one through the medium of the influenza bacillus. In the latter case the analogy with the Aldershot cases of purulent bronchitis described by Abrahams, Hallows, French, and Eyre would be very close. It is certain that the *Bacillus influenzae* has played an important rôle in this epidemic, but there is reason to believe that the measles attack in itself lowered the body resistance sufficiently to permit of a general invasion by the streptococcus. In any case, our observations tally in principle with those of the above workers, and are an interesting variant on the pneumococcal infection found by them.

It is interesting that, in a recent paper dealing with pulmonary complications following measles, Cumming, Spruit, and Lynch (*Journal of the American Medical Association*, April 13th, 1918, p. 1066) ascribed 94 per cent. of the fatalities to an infection by haemolytic streptococci. These authors make no reference to the influenza bacillus.

We have been frequently struck, both at Codford and at Tidworth, by the unusual preponderance of streptococcal, as contrasted with pneumococcal, infections in all types of pulmonary disease occurring amongst Australians and New Zealand troops on Salisbury Plain, and this has been especially noticeable in the cases of lobar pneumonia we have examined.

In many cases *Staphylococcus aureus*, although not one of the constant pathogens, must have contributed much to the acuteness of the pulmonary attack. As regards the pathology of the condition, two points are of special interest. In the first place the very varying gravity of the lung lesions found at autopsies shows that these lesions in themselves could not be held responsible for the fatality of the outbreak, which must without doubt be traced to the general toxic condition. In the second place, the exhaustion of all protective measures on the part of the body is typified by the feebleness of the leucocytosis and the absence of splenic and hepatic enlargement. Indeed it is almost to be wondered at that vaccine treatment elicited from the jaded patients the response which our charts exemplify, and it is unfortunate that time did not permit of opsonic comparisons being made.

We are indebted to Lieut.-Colonel G. H. Goddard, D.S.O., R.A.M.C., O.C. Tidworth Military Hospital, for permission to publish this article.

Postscriptum.—In a recent epidemic (October, 1918) of malignant influenza we find that respiratory symptoms are prominent, but only in a few cases is the sputum purulent. Moreover, several non-purulent cases present the features of profound toxaemia, collapse, and heliotrope cyanosis, which seems to suggest that purulent bronchitis is only one incident in a virulent mixed infection by Pfeiffer's bacillus and other organisms.

THE DIFFERENTIAL DIAGNOSIS OF SCARLET FEVER, MEASLES, AND RUBELLA.

BY

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IT is of the greatest importance that these diseases should be distinguished from each other and from non-infectious diseases in the army, because (1) the quarantine periods vary, (2) the infectivity varies, and (3) the severity varies in different cases.

A definite method should be employed in the examination of cases so that nothing is missed, and the result of the examination should be accurately recorded for the benefit of subsequent observers. It is necessary that a good light be available, and that the throat, mouth, and skin be examined from above downwards. The temperature should be taken. Koplik's spots require a good light to be seen, and the mucous membrane opposite the lower molars should be turned out to the light by means of the forefinger of the hand outside, and the mouth should be open. The patient should be asked when he felt ill first, not when he reported sick; particulars of the onset should be obtained, especially where and when the rash appeared first. The incubation periods are useful to keep in mind.

The Onset.

Scarlet Fever.—Sore throat, shivering, sometimes vomiting, and the rash out within forty-eight hours, missing the face, and being seen on the neck, arms, and upper part of the body. Circumoral pallor is indefinite in adults, and I do not attach much importance to it.

Measles.—Headache, malaise, coryza the first day; Koplik's spots the second day, remaining the third, fourth, and fifth days. They should be seen two days before the rash comes out on the forehead, and still be seen the first two days of the rash; after this period they fade away. The rash comes out late on the third day or early on the fourth.

Rubella.—Little or no malaise, headache, slight fever, slight sore throat, the rash out from the second to the third day, but in a number of cases the appearance of the rash is the first indication that anything is wrong.

The Position of the Rash.

This is most important. These rashes have a definite distribution, a definite way of appearing, and a definite way of fading.

Scarlet Fever.—This rash does not usually appear on the face; it avoids the face as a rule. It is seen first on the neck, and spreads from above downwards. The feet are the last to show it. In the same way it fades, and the dorsum of the feet will show the rash distinctly when it is fading or has faded higher up. This is specially important when the rash is not a very heavy one. On the flexures of the joints the rash is likely to be more pronounced, or even haemorrhagic.

Measles.—The rash begins upon the forehead as a blotchy, livid discoloration, and spreads downwards. In twenty-four hours it is out on the legs, and is beginning to fade on the face by the time it is fully out on the feet and legs. It affects the whole body when it is fully out. It disappears from above downwards, and can be distinguished last on the feet.

Rubella.—This rash may be seen on the face first, but is evanescent. It also spreads from above downwards. It is necessary to look at the dorsum of the feet in all cases, because the rash may be seen there when it has faded from the body. This is essential to remember.

The Character of the Rash.

Scarlet Fever.—This rash is composed of fine red points on the background of an erythema; it may be discrete or confluent. When the latter, there is a bright general redness, and the skin may be swollen. The flexures may show in addition a haemorrhagic staining of the skin, not necessarily petechial. This is never found in rubella; the rash is more lasting, and may take several days to fade.

Measles.—This rash comes out as a papular rash, small red papules which can be felt projecting by the examining finger. Round a papule is a livid dark blotch. There may be several papules together, with one blotch around them. The rash is discrete at first, but rapidly the blotches become larger, more come out, and the general appearance becomes what is described as measly, or morbilliform, hence the name measles. These papules may be petechial, but the surrounding blotch is always there.

Rubella.—There are two types of rash—the scarlatiniform and the coarsely punctate with macules. It must be distinguished from scarlet fever, and the tests are: the evanescent character, the colour, and the fact that on some part of the body the rash will be found to be coarsely punctate and macular. In the scarlatiniform type the rash is not red but pink in colour, composed of pink points closely set together. This rash is usually found on the trunk, but if the feet are looked at, the rash will be found to be coarsely punctate and macular. In the ordinary type the rash is composed of large points, pink in colour, and mixed up with pink macules. The rash is discrete, but sometimes it is petechial as well. In all cases it is evanescent, and begins to fade in twenty-four hours, so it should be seen as soon as possible. It is last seen on the feet. The rash does not become deeper on the flexures. When associated with glandular enlargements and pink eye, there should be no difficulty in distinguishing it.

Early Symptoms.

Sore throat is a prominent feature in scarlet fever; coryza in measles; and slight headache, and slight watering of the eyes in rubella. Vomiting is not uncommon in measles and scarlet fever, and shivering in scarlet fever, while in rubella there may be no symptoms at all and the first thing noticeable is the rash.

Glandular Enlargements.

Enlarged glands below the ear are common in scarlet fever, and are associated with the sore throat. In measles, where there is a catarrhal throat and a measles rash on the mucous membranes, there are enlarged glands. In rubella the suboccipitals should always be examined; they are sometimes tender, and always easily palpable, but in some cases they are not enlarged, but the posterior cervical instead. The epitrochlear groin and axillary glands may be found enlarged. In other cases no glandular enlargements can be found, so that their absence does not exclude rubella, but when they are found it is valuable corroboration of other symptoms and physical signs.

State of the Throat.

In all three diseases the involvement of the throat is the exanthem of the disease.

In scarlet fever the throat is bright red, and red pin-points are to be seen; there may be purulent matter on the fauces and coming down from the nasopharynx. If there is any suggestion that there is membrane, a swab should be taken for bacteriological examination.

In measles the throat is livid and catarrhal, also swollen; Koplik's spots are part of the rash here, and should invariably be looked for. These are small raised spots, whitish in colour, lying on a red blotchy background. I find them in all early cases, and I find them either singly or stippled together in clumps, and I have seen the mucous membrane of the cheeks and palate covered with them. They appear two days before the rash comes out, and last four days. After this time the rash on the mucous membrane has faded, and the spots as well.

In rubella the throat is neither so bright red nor so livid. The soft palate only is reddish-pink. The fauces are only a little engorged, and there are never Koplik's spots.

The Tongue.

In scarlet fever the strawberry tongue is described. There the papillae project through the fur, and if there is no fur the tongue is bright red and rough, but in time the tongue becomes quite smooth. This condition is part of the exanthem, but cases occur where this condition is absent. The mild case is a likely example of this.

In measles the tongue is livid and flabby, it is furred, and not so red as in scarlet fever. In both cases if there is much pyrexia the tongue may be dry and cracked. In a late case the smooth tongue will give an indication of what has been the matter.

In rubella the tongue may be furred and flabby.

The Eyes.

In scarlet fever the eyes are not catarrhal; they are either red or white. In measles they are catarrhal, suffused, and running. In rubella they are slightly catarrhal, and look pink. In some cases this feature is absent.

The Significance of Peeling.

Measles does not peel usually, and when it does so the peeling is branny, and on the body only. Rubella does not peel as a rule, but I have seen slight temporary peeling on the hands only of a pinhole character on the tenth day. In scarlet fever peeling is the final thing which clinches the diagnosis.

Scarlatiniform rashes as I have described them are seen with little or no constitutional disturbance, with only slight sore throat, slight erythema, and no strawberry tongue. If the disease is a mild form of scarlet fever peeling will occur. It may occur on the neck or body in the first week, on the hands about the fourteenth day, on the feet about the twenty-first day, having missed the body. If it appears as pinhole points, with scales or casts coming off the fingers or toes, then the case is one of scarlet fever, and if infection is considered to last until peeling is finished, then the case should be isolated. It is this class of missed case which is often responsible for the sporadic cases which occur from time to time, and the origin of which is uncertain.

The Temperature.

This is raised in all these cases. In the first two it is high, and remains high. In the mild case of scarlet fever there may be little rise of temperature. In rubella also the rise of temperature may be slight or not at all, and only temporary. A typical rubella rash may be found with a normal temperature. This class of case is responsible for the disease becoming established in units, and the only thing to do is to have routine inspections and round up all cases showing the rash.

The Possibility of Diagnosis before the Rash comes out.

This can be made in all cases of fever and coryza, if the mouth is examined for Koplik's spots, and they are found. Fever and sore throat only suggest scarlet fever, if there have been previous cases, but the rash coming out will soon settle the diagnosis. Malaise and backache with slight fever and slight coryza suggest rubella, and such cases, where there have been previous cases, should be segregated. The rash will be out in two or three days and settle the matter.

The Possibility of Diagnosis with the Rash Faded or Fading.

The distribution will be seen, and in scarlet fever there will be staining of the skin, and the bends of the elbows and the shoulders will show dark punctate discoloration. Moreover, peeling will be starting. In measles there will be a blotchy mottling on the parts where the rash has been. This may be in evidence for a few days, but there will be little seen after a week. In rubella there will be a punctate and macular mottling, corresponding to the rash, but this will not last long, and if one sees the case after the third day it may be impossible from the rash alone to say what has been wrong.

Differentiation from Non-infectious Rashes and Skin Eruptions.

By following the character and distribution of the eruption or rash there should be no difficulty. A dirty and sweaty skin, and a parasitic condition associated with a chill, may imitate an exanthem, but these do not show the proper distribution. The eruption is indifferently distributed. The parasitic condition will show scratch and bite marks. Ordinary skin lesions have their characteristic appearance and distribution, but an exanthem may be present also. An exanthem may complicate a gas dermatitis, but on looking at a piece of skin which is free from the irritative condition, and at the throat, and remembering the points about the distribution and character, there should be no difficulty. Scarlatiniform and other rashes, erythematous or blotchy, are described in influenza and in other forms of pyrexia of uncertain origin. Where scarlatiniform, the distribution is wrong; where urticarial or blotchy, the distribution on the body and limbs is indifferent, and the rash is evanescent. It tends to come out on repeated rises of the temperature, and where blotchy there are no Koplik's spots nor papules. The throat will not be characteristic.

Mixed Infections.

Diphtheria may complicate scarlet fever and measles. Where there is membrane or sloughing a throat swab should be taken and serum used without delay.

NOTES ON SURGICAL SCARLET FEVER.

The subject of surgical scarlet fever is one which is of some importance in view of the large number of surgical casualties now under treatment. It is thought that this condition is identical with the ordinary scarlet fever of civil life.

There are three classes of cases: (1) Where the infection is through the wound; (2) where the infection is through the wound after an operation for the removal of a foreign body or other proceeding of a cutting nature; (3) where the infection is through the throat.

In the first class the wound may be recent or not. It is septic. The patient develops fever, vomiting, shivering, and sore throat. The rash appears from twenty-four to thirty-six hours after, commences on the face, and rapidly spreads to the body, and finally to the feet. It is a red punctate erythema, in severe cases confluent, and the distribution is on the body, back and front, the neck, shoulders, flexures of joints, and inside of thighs. The wound is much inflamed, and the redness is more marked around the wound, the skin being swollen. The redness gradually lessens the further it gets from the wound. The temperature remains high for three or four days, and peeling begins from the face and neck as early as the fifth day, spreads to the body, the hands are affected about the fourteenth day, and the feet subsequently, sometimes as late as the twenty-first day. Peeling may take longer to finish than six weeks. It has been noticed that any surgical procedure after the rash has gone does not produce a recurrence.

The second class of case is one in which, after removal to a hospital, an operation is performed to remove a foreign body. The wound, which is already septic, and which has been opened up, becomes very inflamed, and in about twenty-four hours or less there is shivering, vomiting, and rise of temperature. Sore throat is present, and

the attention of those concerned is attracted by the appearance of a rash on the body. The wound is very inflamed, even sloughing, and round the wound the skin is bright red and swollen. The swelling of the skin becomes less the further it is from the wound. The rash on the skin is bright red and confluent in some cases, and where it is not confluent it is a punctate erythema. There is a red and congested throat and a red and swollen tongue. In three or four days peeling begins on the neck and rapidly spreads to the body and limbs. It is prolonged, often over six weeks. It commences from above downwards and finishes in the same order. This class of case closely resembles the first class, but is more severe. Obviously, a greater and more virulent amount of infective matter has found an entrance through the cut surface of the operation wound.

The third class of case is where there is a wound, or lesion of the skin, but there is no local erythema. In this class of case there are the early symptoms—the sore and dirty throat with exudation, the shivering, fever, and malaise, but the rash and tongue are not such prominent features. The rash may be confluent on the back and elbows, but is a discrete and punctate erythema on the body and limbs. It is often evanescent, lasting only a day or two, and in times of stress may be missed, and attention be subsequently drawn to the condition by the discovery of desquamation. In this class of case desquamation follows in the same order as in the first two, but may be later in commencing. Cases occur with little rash where desquamation starts as late as the eleventh or fourteenth day, misses the body, and is found only on the hands and feet.

Operation in this class of case did not produce any recurrence of the symptoms.

All these cases seem to belong to the group of streptococcal infections. They vary in their intensity with the facilities for the admission of the coccus or its toxin into the circulation. I cannot distinguish them from ordinary scarlet fever, and am of opinion that the diseases are identical. These diseases have been treated in the same ward with ordinary scarlet fever cases, and there have been no cases of secondary infections. It is impossible to say that it is safe to keep them in the same ward with general surgical cases, whether clean or infected, but where missed cases have been found late in the disease, it does not appear that they have left a track of infection behind them.

The period of observation has been eighteen months, and the number of cases sixty, and the wounds in most parts of the body.

INCUBATION PERIOD OF INFLUENZA.

BY

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THE incubation period of influenza is not yet definitely settled, and although the number of the cases we describe below is small, the opportunities for their observation were so close that we give an account of them, as they go some way towards fixing it within small limits of error.

We travelled from London together on Thursday, October 3rd, by train leaving King's Cross at 5.30 p.m., arriving at York 9.30, and as we were leaving the carriage a young flying officer who had come the whole way with us, and was coughing and sneezing at intervals, informed us that he was ill, and had had "influenza" for several days. On Saturday, October 5th, we both became ill, and both developed typical attacks of influenza. With both of us the illness developed suddenly with laryngitis; in both the first signs were a severe attack of coughing; and in both the time was noted fairly accurately as being between 2 and 2.30 p.m. One case was quite mild, the temperature was never over 101°. The other was more severe; the temperature rose to 104.5°, and the catarrh extended to the bronchi. His wife and two children also developed influenza, and in their cases the first symptoms showed suddenly about 2 p.m. on Monday, October 7th.

Now we are convinced that we became infected from our travelling companion during our train journey, more likely towards the end of the journey; and if we take the time of infection as 9.30 this fixes the incubation period for both of us at a minimum of forty-one hours, with a maximum margin of error of four hours. But as we may presume that the bacterial content of the railway carriage increased with the time of our journey, we incline to regard our infection as dating from the end of our journey rather than the beginning; so that we take the incubation period to have been nearer forty-one than forty-five hours.

The three cases developing in the family of one of us point to a similar incubation period, as their illness started almost exactly forty-eight hours after his, and as it is likely that infection would not take place until a few hours after the first symptoms, the incubation period in these three cases must have been very nearly the same as in our own two.

It can readily be understood that we were in no condition to conduct extensive bacteriological examinations, but a culture taken from the posterior nares of one of us on October 10th, with a guarded swab to prevent soiling from the flora of the mouth, showed colonies of Pfeiffer's bacillus and of *Micrococcus catarrhalis*.

Reports of Societies.

DISCUSSION ON ENCEPHALITIS LETHARGICA.

AT a meeting of the Sections of Medicine, Epidemiology, and Pathology of the Royal Society of Medicine held on October 22nd, Surgeon Rear Admiral Sir HUMPHRY ROLLESTON, K.C.B., R.N., in the chair, a discussion took place on encephalitis lethargica.

Lieut.-Colonel F. W. MOTT gave a summary of the results of the examination of two brains, by M. Marinesco, Professor of Neurology at Bucharest, who had been working for some time past in the pathological laboratory of the Maudsley Neurological Clearing Hospital. Disseminated miliary or punctiform haemorrhages visible to the naked eye existed in the grey matter in the neighbourhood of the floor of the fourth ventricle, the aqueduct of Sylvius, and even the third ventricle, and were also found in the posterior part of the pons and the peduncles. The cerebral cortex, except for congestion of some of the vessels of the leptomeninges, had shown in these two cases neither macroscopic nor microscopic lesions. On the contrary, the first segment of the spinal cord, which was the portion of the cord available, had presented the same histological lesions as the pons, bulb, and peduncles. Microscopical study of the above mentioned regions had demonstrated the existence of four kinds of lesions:

1. Infiltration of the walls of the small vessels and especially the veins, consisting of lymphocytes and plasma cells in the adventitia, disposed in several layers. The endothelium and fibroblasts might also take part in the inflammatory process.
2. Foci of interstitial inflammation consisting of neuroglia cells of several kinds, including large cells with voluminous excentric nucleus, and many fibrillar prolongations, lymphocytes, and polynuclears. The foci of interstitial inflammation appeared sometimes to be altogether independent of vascular infiltrations, and might occur in the roots of the nerves—for example, hypoglossal, pneumogastric, etc.
3. Lesions of the nerve cells which did not correspond with those usually seen in infantile paralysis. There was dissolution of the "*soi disant*" Nissl bodies, relative achromatosis, reduction in volume of the cellular body and of the number of prolongations and multiplications of the satellite cells, but only exceptionally was there evidence of neuronophagia, as was described by Economo.
4. The foci of haemorrhage, the most obvious macroscopic change, were seen to be much more numerous when microscopic examination was made. These haemorrhagic foci remained circumscribed around the walls of the small vessels, and red corpuscles were mingled with the cells of inflammatory infiltration, or they constituted a kind of covering, and floated about around the vessels. In spite of the very great number of haemorrhages the vessel wall did not appear to be necrosed, but sometimes a solution of continuity of the vessel wall could be seen.

From microscopic investigation of these two cases M. Marinesco drew some conclusions upon the nature of the disease. He regards lethargic encephalitis as a disease entirely different from botulism, from the haemorrhagic poliomyelitis of Wernicke, from the poliomyelitis of Heine-Medin, and from sleeping sickness. Like these two last diseases, it was an infectious inflammatory disease, but the nature of the infectious germ had not yet been determined. It was distinguished from botulism by its

symptomatology and by the four above mentioned histological lesions. The vascular lesions due to the presence of an infiltration of the walls of the vessels by migratory elements were absent in botulism, and the readily recognizable *Bacillus botulinus* had not been found in these cases.

Lieut.-Colonel Mott then showed photomicrographs illustrating the chronic inflammatory conditions of the perivascular lymphatics in sleeping sickness and cerebro-spinal syphilis, in which there was definite infection by a specific organism, and which might be accompanied by somnolence. In epidemic encephalitis and the bulbo-pontine encephalitis of Heine-Medin disease, which, as Wickman had shown, was a form of anterior poliomyelitis, somnolence was a frequent symptom, passing on to coma. Epidemic encephalitis was an acute inflammation of the subadventitial perivascular lymphatics, and was characterised by naked-eye haemorrhages in the pons, the medulla, the pedancles, and around the third ventricle. Microscopic examination showed not only lymphocytes and plasma cells in the lymphatic sheaths of the arteries and veins, but large numbers of polynuclears, and the inflammation was so acute that there were haemorrhages not only into the lymphatic sheath and periadventitial space, but into the tissues around. There was proliferation of neuroglia cells around the vessels and in the nervous tissue in the proximity of the inflamed vessel.

He could find no essential difference between this epidemic encephalitis, with its characteristic clinical symptoms of fever, headache, oculo-motor, facial and bulbar symptoms of difficulty in swallowing, paralysis of soft palate, and respiratory symptoms, and the ponto-bulbar encephalitis of Oppenheim and Cassirer, and observed frequently in the epidemic described by Wickman. In the Heine-Medin disease, as in cerebro-spinal syphilis, different forms arose according to the maximum seat of the lesion, and this might be explained by supposing that the primary seat of invasion of the lymphatics of the nervous system varied in different cases and in different epidemics. Thus the spinal cases might start from the intestines and find access to the spinal cord by the lymphatics surrounding the lumbo-sacral arteries; lesions in the bulbo-pontine and upper spinal region might start from infection of the lymphatics surrounding the vertebral artery when the throat and nose was the primary seat of invasion of the periarterial lymphatics, or by the infection of the internal carotid in the encephalitic and meningeal forms. It was said that this epidemic of ponto-bulbar encephalitis could not be the same as Heine-Medin disease, for the cerebro-spinal fluid obtained by lumbar puncture contained no lymphocytes. Dr. Box had had cases in which lymphocytes had been found. It appeared that when the meninges were affected lymphocytes and albumin were certain to appear in the cerebro-spinal fluid.

Dr. P. N. Panton said that the examinations made of cases in the clinical laboratory of the London Hospital consisted in investigations of the leucocytic content of the blood and the protein and cellular contents of the spinal fluid. The results were compiled and published by his colleague Dr. Vaidya in the *Lancet* of September 7th, 1918, and he proposed to give a brief summary of these findings:

Twenty of the most typical cases were examined, and it was probable that the diagnosis was incorrect in two only. In both these cases the error in diagnosis was indicated by the laboratory examination. One case had a leucocytosis of 21,200 per cubic millimetre, by far the highest count of the series, and proved to have lobar pneumonia. In the other tubercle bacilli were found in the spinal fluid during life, and miliary tuberculosis *post mortem*. In the remaining cases the average leucocyte count, 7,600 per cubic millimetre, and the relative proportions of the cells were about normal. An occasional somewhat higher leucocyte count was explained by the presence of a septic rash or some other complication.

The spinal fluid was in all cases clear and without any coagulum on standing, such as was found in tuberculous cases. The protein was never more than slightly increased, and the cellular content was either normal or slightly increased also, the type of cell being always lymphoid. In some cases the protein excess, which, though not great, was constant, was greater than might have been expected from the small number of lymphocytes found.

Although these changes were very slight they appeared to them to be constant. The value of leucocytic and, in particular, of spinal fluid examination as a means of excluding diagnoses of epidemic encephalitis was abundantly manifest in numerous cases of other diseases occurring during this epidemic, but not included, with two exceptions, in the series.

Dr. F. G. Crookshank said that in describing the cerebro-spinal fluid examination it was necessary to state the day of the disease on which the fluid was taken, as the cell count, etc., differed from day to day.

Epidemiology.

Dr. W. H. Hamer pointed out that just as in 1915 the so-called epidemic of cerebro-spinal fever was really only a small part of an influenza prevalence, so in the epidemic encephalitis of the spring of 1918 a particular cluster of symptoms was once more being singled out for scrutiny, and that here again the epidemic, so called, was merely part and parcel of a prevalence of influenza. He referred to Brorström's demonstration of the influenzal nature of poliomyelitis, to the London evidence relating to the common origin of cases of influenza and of cerebro-spinal fever, and to the similar conclusions arrived at by an army bacteriologist from study of the 1915 outbreak in camps. The proof that epidemic lethargy was no new disease was writ large in Hecker and in Creighton, and was now being followed out in detail by Dr. Crookshank in his Chadwick lectures in course of being delivered. In view of the fact that "Spanish influenza" had followed hard upon the heels of epidemic encephalitis, he ventured to plead once again for the epidemiological point of view. These new diseases could not be completely understood by making cell counts and cultivating various strains of organisms, nor fully comprehended by insisting upon the fact that particular structures had been picked out in the cerebro-spinal nervous system, and that the lesions were here at one level and there at another, nor satisfactorily explained by focussing attention upon some particular sign or symptom, whether it were sweat, lethargy, paralysis, an exanthem, or some evidence of involvement of the pulmonary, nervous, or gastro-intestinal systems, and by considering each phase of the epidemic prevalence in relation thereto, and studying it apart from all the other phases. Recognition of the epidemiological point of view implied, he submitted, a return to Sydenham's method. Creighton had declared that there was something more than accident in the association between epidemics of influenza and epidemics of "ague." Study of the last named showed clearly that they were not, of course, outbreaks of malaria, but precisely those very gastro-intestinal, pulmonary, and nervous manifestations which we were now beginning to realize actually constituted part and parcel of the influenza prevalence.

Lieut.-Colonel S. P. James (Local Government Board) said that Sir Arthur Newsholme had authorized him to give a brief summary of the results of an inquiry into encephalitis lethargica recently carried out by the medical staff of the Local Government Board in collaboration with the Medical Research Committee. Owing to printing difficulties the issue of the report of this inquiry had been greatly delayed. The summary he gave was abbreviated from Sir Arthur Newsholme's general review which prefaced the report.

In its initial stages last April the inquiry was concerned chiefly with an investigation of the hypothesis that the illness was a manifestation of botulism. In connexion with that view Dr. McIntosh, on behalf of the Medical Research Committee, carried out a complete bacteriological investigation, and Drs. Hancock and Pearse, of the Food Branch of the Board's Medical Department, personally investigated, from the point of view of a possible food origin, 58 cases reported up to May 7th. The result of these preliminary inquiries was that neither on the bacteriological nor on the epidemiological side could any direct or indirect evidence be obtained of an association of the illness with the *Bacillus botulinus* or with infection from food.

In addition to proving that the illness was not due to food, the results of the preliminary inquiry pointed to a possibility that it might be one of the many forms of the disease, or group of diseases, to which nosologists at present attached the indiscriminative label "Heine-Medinische Krankheit," of which infantile paralysis—officially termed acute poliomyelitis—was the commonest type of illness.

It was found, however, that from infantile paralysis the present illness differed very strikingly not only in the localization of the paralysis and some of the equally obvious signs, but in its age incidence, seasonal prevalence, course, duration, and fatality.

In these circumstances it was decided to carry out a more complete clinical and epidemiological study of the illness than had been attempted in regard to the first fifty-eight cases. The Public Health Department of the London County Council agreed to investigate all cases in the London area. Up to the end of June the number of cases in the London area inquired into was 107,

and the number in the provinces was 121. Apart from these special inquiries Dr. MacNalty was deputed to undertake a detailed personal study of the clinical symptoms of the illnesses, conferring with Sir William Osler and with Major George Draper of the United States Army Medical Corps, who examined and reported cases in Birmingham, Leicester, Oxford, and other localities. On the bacteriological side, in addition to the research in connexion with a possible food origin, the problem of the nature of the illnesses was attacked from the point of view that the virus might be closely allied to, or perhaps identical with, that of acute poliomyelitis, and in this line of research animal experiments were begun as soon as the necessary monkeys could be obtained. In addition Sir Walter Fletcher, F.R.S., Secretary to the Medical Research Committee, secured the services of Professor G. Marinesco of Bucharest for the examination of specimens from fatal cases of the disease. The accounts given by all the observers might be summarized very briefly as follows:

1. For identification and description it was decided to follow von Economo in terming the illness encephalitis lethargica—a name which had the right of priority, and indicated a characteristic clinical feature.
2. Dr. MacNalty, from his clinical study, concluded (*a*) that in its essential primary features the illness had a characteristic and constant symptom series of its own; (*b*) that between this symptom series and that of the rare forms of poliomyelitis, with which alone it could be confused, the clinical differences were more marked than the resemblances.
3. The results of the epidemiological inquiries were to the effect that encephalitis lethargica was not a form of acute poliomyelitis, and that its presence and epidemic prevalence depended on conditions other than those necessary for the presence and epidemic prevalence of that disease.
4. Both Professor Marinesco and Dr. McIntosh, as a result of their separate researches, arrived independently at the conclusion that encephalitis lethargica, as it appeared in the present outbreak, was identical with the illness described by von Economo in Austria and Professor Netter in France, and that it was a disease *sui generis*, anatomically and clinically distinct from analogous affections.

Various hypotheses had been suggested by different workers engaged in the inquiry, but the view which appeared best to agree with the present knowledge was that encephalitis lethargica was one of the groups of diseases in which, as in cerebro spinal fever and acute poliomyelitis, the pathogenic agent was much more generally present in the human organism than the clinical evidence implied. As regards cerebro-spinal fever, this was no longer a hypothesis, but a well-established observation. In that condition the specific reaction named cerebro-spinal fever arose in one or other of two ways: first, as the result of a breakdown in the immunity to the effects of the virus which the individual who harboured it had up to that time enjoyed; second, as the result of a non-immune person becoming infected with a strain of virus which had attained the degree of pathogenic action described as specific. During severe epidemics evidence could sometimes be otained that cases of cerebro-spinal fever arose in both these ways, but during the inter-epidemic and mild epidemic periods, it was seldom or never possible to obtain evidence that the illness was infectious; at such times cases of the disease were always scattered sporadically, and, except the patient himself, they could not be traced to any known source of infection. This was the view that best explained the irregular widespread sporadic distribution of encephalitis lethargica. Until further research yielded precise information, we might assume that many people harboured the organism of the illness, perhaps as a harmless saprophyte, perhaps as a "conditional parasite," perhaps in the stage when it must be termed a "specific pathogenic parasite"; and that in certain of these persons there occurred for some unknown reason an enhanced virulence of the parasite, or a lowered resistance of the tissue cells, or both, the result being that the stimulus of the parasite overcame the resistance of the tissue cells, and the host suffered from the effects of the virus, which previously he had harboured with impunity. This explanation implied that the key to the problem rested, not in the purely bacteriological view of the causation of disease, but in the wider view that disease resulted from the interaction of several factors, of which changes in the properties of the tissue cells on the one hand, and in the provoking stimulus or pathogenic agent on the other, were the chief. The view emphasized the rôle of the individual in the origin and progress of the disease; and the practical indication would seem to be to enlist all the resources of personal and public hygiene in an endeavour to influence favourably the potential energies of body and tissue cell resistance, especially in individuals who might seem to be predisposed to a disease of this nature if they happened to become a host of its parasite. At the same time it was clearly of importance to pursue research both to ascertain what pathogenic agent was concerned and into the factors of individual predisposition and correlated resistance, the variations of which were subject to so many influences. The first necessity for these studies was early and complete information of all cases of the disease in different parts of the country, and for this reason the Local Government Board had decided as a temporary measure to make encephalitis lethargica compulsorily notifiable for a period of one year.

Lieut.-Colonel James then reviewed briefly the relevant epidemiological data collected up to the end of June, and thought that the evidence adduced, in both quantity and kind, supported the conclusions: (1) that the illness under consideration was not a form of acute poliomyelitis; (2) that its presence and its prevalence in epidemic form depended on conditions other than those necessary for the presence and epidemic prevalence of that disease. He displayed charts comparing the seasonal incidence of poliomyelitis and encephalitis lethargica, and maps comparing the distribution of the two diseases.

Dr. A. S. MACNALTY described the disease of encephalitis lethargica occurring in the recent outbreak as an acute illness in which nervous localizing signs might or might not be present. There were three types:

(1) A type displaying general disturbance of the functions of the central nervous system but without localizing signs. (2) Types with nervous localizing signs: (*a*) clinical affection of the third pair of cranial nerves; (*b*) affections of the brain, stem, and bulb, with local lesions of other cranial nerves; (*c*) affections of the long tracts—for example, pyramidal, pre-pyramidal, and up-coming afferent tracts; (*d*) ataxic types (involvement of cerebellar mechanism); (*e*) affections of the cerebral cortex; (*f*) types indicating some evidence of spinal cord involvement; and (*g*) polyneuritic type. (3) Mild or abortive types, with or without localizing signs in the central nervous system. The *incubation period* was probably variable. The *prodromal period* ranged from the first to the seventh day but might be as protracted as three weeks, during which occurred lethargy, headache, giddiness, and diplopia, as well as lassitude, fatigue, vomiting, and diarrhoea.

The acute manifestations included a slight early rise of temperature (to 101° or 102°F.), marked asthenia, catalepsy, stupor (alternating with nocturnal delirium), emotional changes, changes in speech (which became either nasal, monotonous and slurred, or chattering, rapid, and unintelligible), fibrillary movements, and choreic movements of face, trunk, and limbs, muscular pains, hyperaesthesia, retention or incontinence of urine, incontinence of faeces, and sweating. Skin eruptions and dysphagia might also occur. Marked constipation was the rule.

The rapid complete or partial clearing of the paralysis was the most remarkable feature of the types with nervous manifestations. Mild or abortive types were rare. Recovery was gradual and tedious, chiefly on account of the great prostration and muscular weakness. Death appeared to be due to paralysis of the respiratory centre in the medulla and was preceded by intensification and frequency of delirious attacks, deepening of the stupor, and coma. After-effects noted were (1) alteration in the mental condition, (2) persistence of cranial nerve palsies, (3) the subsequent appearance of paralysis, apparently of spinal origin, and (4) athetosis. He concluded that though the disease resembled poliomyelitis it differed from it in important respects, and displayed characteristic symptoms. It was possible that the accepted classification of poliomyelitis had been made on too wide a basis, and certain cerebral, ponto-bulbar and ataxic types might have been examples of the clinical forms observed in this outbreak. Cases of poliomyelitis and encephalitis had been known to occur side by side. He thought that the relationship between them might be comparable to that existing between typhoid fever and paratyphoid.

Lieut.-Colonel A. J. HALL discussed the clinical side in a communication printed in the JOURNAL of October 26th.

Dr. F. G. CROOKSHANK gave statistics of 127 cases observed by him, 120 occurring at the London Hospital, 4 at the North-West London Hospital, and 3 private cases.

Of these, 77 were males and 50 females. Under 5 years there were 28 cases (17 males and 11 females); from 5 to 10 years, 29 cases (16 males and 13 females); and over 10 years, 70 cases (44 males and 26 females). There were 26 deaths (or 20.39 per cent.), and 11 *post-mortem* examinations were performed.

Cerebro-spinal Fluid.—In 51 cases lumbar puncture was carried out, and in 44 cases the cerebro-spinal fluid was examined. In 43 cases cytological reports were made. In 25 cases lymphocytes and in 4 cases leucocytes were found in excess. In 6 cases lymphocytes and in 2 cases leucocytes were in marked excess. Protein was present in excess in 26 cases. Organisms were found in 16, no organisms were found in 12, Gram-negative organisms were found in 2, and Gram-positive in 2 cases.

History and Mode of Onset.—A history of injury to the head was given in 9, of tooth extraction in 2 cases. There was a two-stage history in 46 cases, sudden onset of nervous symptoms without previous illness in 36, gradual onset of nervous symptoms in 17, whilst the onset was undetermined in 28.

General Symptoms.—Sweating was marked in 13, diarrhoea in 7, and constipation in 29 cases. Glycosuria occurred (without previous history of it) in one case, and acetonuria in 4 cases. At the onset vomiting occurred in 38, and pain in hypochondria in 13 cases.

Rashes occurred in 27 cases, which were miliary in 2, erythematous in 12, petechial in 5, and herpetic in 8, and of these 6 were labial and 2 gluteal. Desquamation was observed in 2 cases, joint swellings in 2, oedema of legs in 1, enlargement of the glands of head and neck in 1, and bedsores in 1 case. Dental irregularities were not positively recorded in more than 10 cases.

Signs and Symptoms Referable to the Nervous Symptoms: Mental.—Emotionalism, or "hysteria," was marked in 5 cases. Mutism (apart from silence during drowsiness) was noted in 7 cases. Delirium was marked in 19, maniacal delirium noted in 2, "acute delirious mania" following "stupor" in 1, delusions or hallucinations (apart from delirium or mania) in 3 cases. Nocturnal sleeplessness with diurnal drowsiness was marked in 3 cases, drowsiness in 30, stupor or prolonged lethargy in 26, "unconsciousness" or coma in 25, and sequential dementia in 5 cases.

Physical.—Epileptiform fits or convulsions were present in 15 cases; tremors, twitching, or choreiform movements were marked in 22 cases, trismus was marked in 2, head retraction in 23, and limb spasticity in 29 cases. Paresis or paralysis of limbs (apart from general asthenia) occurring transitorily or otherwise without hypertonia was noted in 47 cases, atrophy of limb muscle groups (apart from generalized muscular atrophy) in 10, facial paralysis (other than transitory) in 8, amaurosis (partial or marked, with slight changes in papilla) in 5, ptosis was marked and persistent in 23, strabismus occurred in 19, nystagmus in 14. Deafness and tinnitus was marked in 5, pain and tenderness of limbs in 11, formications, tingling, and numbness in 6 cases; dysphagia occurred in 5 cases, and hypoglossal palsy was marked and persistent in 5. In 6 cases ascending paralysis occurred, and in one case (not included in these statistics) trophic changes and gangrene of the finger-tips appeared, probably due to an acute ascending central myelitis.

A very careful inquiry had convinced him that the various Heine-Medin categories—paralytic, spasmodic, and psychical—had been known in Europe for many centuries. Their prevalences or occurrences (pandemic, epidemic, endemic, communal or commensal) had invariably been associated, conveniently or coincidently, with wider but similar prevalences or occurrences of catarrhal, sudoral, or nervous fevers, now generally regarded as influenzal. The cases spoken of as "infantile paralysis" represented only one end of a spectrum. The other end was represented by various forms of "encephalitis," including the "acute delirious mania" of Drs. Luther and Bell.

Sir ARTHUR NEWSHOLME pointed out that diseases which might occur in conjunction with each other and under similar epidemiological conditions were not necessarily the same.

Lieut.-Colonel GOODALL agreed with Dr. Hamer that this disease was the same as that described by Sydenham, who also called it "the new disease." It was the duty of pathologists, clinicians, and epidemiologists to separate diseases. Diseases which were similar were not necessarily identical.

Dr. CROOKSHANK drew attention to the fact that poliomyelitis attacked a part of the organism in children which was in a very early stage of development—namely, the anterior horn cells. This might be the reason why growing children showed flaccid atrophy in a manner which did not appear in grown-up people. The child grew and developed, whilst the anterior horn cells remained stationary.

Dr. F. BUZZARD said that encephalitis in children was more common than was generally recognized. He had seen two cases of encephalitis lethargica which at first sight appeared typical of paralysis agitans. If the mid brain were attacked, cases of the paralysis agitans class were produced.

Captain Box said that he had seen a case of encephalitis lethargica in 1913 with typical clinical findings and *post-mortem* lesions as described by Colonel Mott. Out of 24 cases in which he had had the cerebro-spinal fluid examined, 6 showed excess of lymphocytes, blood was present in 6, and 2 were negative. In no case was the fluid under pressure. Two cases had rashes, pustular in one case and in the other like measles, but with a different distribution. There was one case of optic neuritis. In 3 cases there were false attitudes of the head, showing a deviation from one or other shoulder, produced by some interference with the peduncular system.

Dr. J. H. MURRAY, Captain D'A. FANO, and Dr. HELEN INGLEBY also spoke.

THE QUATERCENTENARY OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AT the end of the Harveian Oration, delivered before the Royal College of Physicians of London on October 18th, the President, Dr. NORMAN MOORE, after congratulating the Orator, said:

Fellows of the College and Guests,—This day may be regarded as the four hundredth anniversary of the foundation of our College. The portrait of our founder has been placed in view of the congregated College, and the original letters patent which founded it are placed upon the table before me. They are dated September 23rd, 1518, the tenth year of King Henry VIII, whose great seal in green wax is attached in its proper place. I may remind the College that when this charter was granted the King had not displayed the violent conduct in so many directions which afterwards characterized his reign. The last word written on the vellum is the name of Cuthbert Tunstall, then Master of the Rolls and afterwards Bishop of London and of Durham, who attests the affixing of the Great Seal. A friend of Sir Thomas More, of Archbishop Warham, and of Erasmus was an appropriate witness of the origin of our College.

We should like to have celebrated the four hundredth anniversary of this event with a brilliancy suited to it, but the times in which we are living forbid it. Our sons have gone out to meet our enemies in the gate, and many of them will never return. We venerate their actions and their memory, and their absence might not alone have prevented some appropriate celebration, but when we reflected in what a war we were engaged, more or less every one of us, in defence of our liberties and of those of Europe, and indeed of all mankind, we felt that we could not at present take part in the happy kind of ceremonial suitable to times of peace.

Thomas Linacre, a member of the University of Oxford, was our founder. He had studied in Italy and brought the model of our College thence, perhaps chiefly from Bologna where there was a College of Physicians which Leo X, who had been a fellow student of our founder, had reconstituted about 1517. It had a central body of four physicians like our four censors who are now sitting to right and left of me. Linacre knew Wolsey, and partly by his influence obtained the royal charter which you see upon the table. I like to think of Wolsey not merely as an ambitious statesman, and to bear in mind that "he was a scholar, and a ripe and good one, exceeding wise, fair-spoken, and persuading." We ought to remember him kindly as one of our benefactors.

We are all familiar with the learning of Linacre. On the table on one side of the charter are placed one of his translations of Galen into Latin with a note in his own hand addressed to Fox, Bishop of Winchester, and on the other his copy of the first Greek printed edition of Plutarch. He, too, was a friend of More, and Warham, and Erasmus.

The first six Fellows constituted the College, and were John Chambre, Thomas Linacre, Ferdinand de Victoria, Nicholas Halsewell, John Francis, and Robert Yaxley. Linacre occupied the office in which I address you. The Fellows began to carry out the spirit of Linacre's teaching, and were devoted to learning in medicine, in philosophy, and in literature, and handed on that tradition to this day. It seems a proper occasion to give the College a rare book from my own library in memory of the day. It belonged to John Chambre, the very first Fellow named in our charter, physician to King Henry VII and King Henry VIII, and he has written his name on its last page. It is a copy of the 1492 edition of the *Rosa Anglica* of

John of Gaddesden, one of the most famous of the mediaeval physicians of England. Dr. John Chambre has made notes showing that he had read it through, and it is bound in the oak boards covered with stamped leather in which he saw it. I have ventured to write an inscription, giving it to the College.

I have heard that sixteen Fellows of our College, all serving in France, dined together on September 23rd, in memory of the foundation, and that they have sent a letter to us by the hands of Major Michael Foster.

[Major Foster here stepped forward and handed to the President a Latin letter.]

It is engrossed on vellum, illuminated, and signed by the Fellows who dined together. Its initial shows a sketch of the French coast near Boulogne, where they dined, with England on the horizon, and in France, on the left, the Roman bricks of the tower built by Caligula, and on the right Ambleteuse. At the top are the arms of the city and those of the county of Boulogne.

The composition does credit to the scholarship of those present, and the decorations to the skill of the scrivener, who was found in the ranks of our army, and shows how many branches of learning, of art, and of handicraft are to be reckoned among the accomplishments of the officers and men of our gallant army.

The letter is not long:

[1] COLLEGIO Regali Medicorum Londinensium quartum saeculum vitae suae feliciter conditum celebranti et quintum jam faustis auspiciis ineunti salutem plurimam dicunt et libentissime gratulantur Socii subsignati, Gesoriaci Bononiensium inter arma collocati. Longum est nomina percurrere tot virorum illustrium qui sine ulla intercapedine continenter honorem Collegii nostri sustulerunt, scientia artem medicinae aitius provexerunt, feliciter hominum corpora morbis oppressa ad integram valetudinem revocare docuerunt. Sed quotum quidque invenimus Collegium cujus alumni literas quoque humaniores urbanitate tanta et lepore ornaverint, scientiam omnis generis tutius ingenio aedificaverint, rei publicae insignius profuerint?

QUARTO jam anno belli consensu omnium furore teutonico incepti peracto, militantes videmus eheu! qualis nova febrium terris incubuerit cohors, velut e Pandorae pyxide liberata, quot morbos pediculi necnon muscae, quot vapores noxii attulerint, quanta denique strage nostrorum et totius gentis humanae hostis barbarus Marte illacrimabili maxime abusus sit debellandus. Sed sortes jamdudum faustae, florent arma ampliusque florebunt, praevalebit tandem justitia. Quin etiam (cum licet denique) Pheidippidis verbis sine superbiâ usi, spe victoriae certa Collegium nostrum valedicentes jubemus χαίρετε, νικῶμεν.

Gesoriaci Bononiensium,
A.D. ix. Kal. Oct., MDCDXVIII.

W. P. Herringham, Major-General.	T. R. Elliott, Colonel.
W. Pasteur, Colonel.	Michael Foster, Major.
John Rose Bradford, Major-General.	Charles Miller, Colonel.
J. Hugh Thursfield, Major.	Charles J. Martin, Lieut.-Colonel.
J. A. Nixon, Colonel.	W. E. Hume, Colonel.
A. J. Jex-Blake, Major.	Henry MacCormac, Lieut.-Colonel.
W. P. S. Branson, Major.	A. M. H. Gray, Lieut.-Colonel.
Gordon Holmes, Lieut.-Colonel.	S. W. Curl, Captain.

[1] The following is an English rendering of the letter:

To the Royal College of Physicians of London celebrating the fourth century of its existence, now happily concluded, and the fifth with happy prospects now beginning, the undersigned Fellows now at Boulogne with the army wish all welfare and offer congratulations. Long would it take to mention the names of the very many illustrious men who without intermission have continually sustained the honour of our College, who have raised higher by science the art of medicine, and have taught successfully how to bring back to perfect health the bodies of men oppressed by disease. How rare to find a college whose alumni besides their medical knowledge have also been graced in classical literature with such cultivation and refinement, and who have made sound additions to science of every kind, and have done great service to the State.

The fourth year of the war, which all agree was begun by German madness, is now done; we fighting, may see, alas! what kind of new regiment of fevers has descended on earth, as if set free from Pandora's box, and how many diseases lice and flies and noxious vapours have brought and in how great a catastrophe shall the savage foe of our race and of the whole human race who has put ruthless war to its foulest uses be thoroughly beaten down. But the chances have now been for some time favourable, our arms flourish and will flourish yet more; justice at length will prevail. Now, moreover, we may be allowed to use the words of Pheidippides without arrogance, in certain hope of victory, when bidding farewell to our College, χαίρετε, νικῶμεν.

Boulogne, September 23rd, 1918.

It was long a custom of the College in letters and prefaces to include some words of Greek, and our Fellows abroad have followed this usage and their letter ends:[2]

χαίρετε, νικῶμεν.

Continuing the custom, I reply:[3]

χαίρομεν, τὸ εὖ νικάτω.

We are delighted that our brothers, the Fellows serving in France, have thus remembered us. What place could at this day be more appropriate for their feast than the city of Godfrey of Boulogne, conqueror of Jerusalem, the prototype at the end of the twelfth century of General Allenby in our time. The writers of the letter rightly think Major Foster representative of Pheidippides, the messenger sent from Athens to Sparta when the Persians were advancing. When the letter to us was written good fortune had not so distinctly begun; the tide has risen since. Major Foster is indeed to-day a messenger of victory. It was, and I think is still, the custom to give a substantial reward to such a messenger. The officer who brought the news of Blenheim received 500 guineas. I should have liked the gift which I hand to Major Foster to be as splendid, but it is suitable in its kind, even if less magnificent. In this little box which I now give to him are two silver coins: one is a denarius of Caligula, in memory of the place where our colleagues dined, and where some remains of Roman brickwork mark the site of his tower; the other is a drachma of Larissa struck at the place where Hippocrates practised medicine, and not long after his time, which will remind Major Foster of our profession, to which he and the other signatories of the letter are so nobly adding honour in the field.

I have one more pleasant duty. It is to present the Moxon Medal to Dr. Mott. The war has led to increase of knowledge in many ways in medicine, perhaps most in relation to diseases and injuries of the nervous system, and the College has awarded the Moxon gold medal for Clinical Medicine, a reward commemorating a famous clinical teacher of Guy's Hospital, to Dr. Frederick Walker Mott, who before the war and since its outbreak has been a most distinguished and persevering observer in this and other parts of clinical medicine.

THE FRENCH VIEW OF INTERNATIONAL SCIENTIFIC RELATIONS AFTER THE WAR.

THE following resolutions, recently adopted unanimously by the Académie des Sciences of the Institute of France, were unanimously endorsed by the Académie de Médecine on October 15th:

1. The Academy, believing personal relations between scientific men of the two groups of belligerents to be impossible until reparation and expiation of the crimes which have put the Central Empires under the ban of mankind permits them again to enter the concert of civilized nations, has adopted the following resolutions:
2. The Central Empires shall be compelled by a provision of the treaty of peace to retire from international scientific associations established by diplomatic conventions and implying personal relations between the members. This exclusion would not apply to common action solely concerning administrative relations indispensable between such public service as those affecting the regulation of navigation, railways, telegraphs, etc.
3. As soon as circumstances allow, those international conventions not belonging to the two categories noted above shall be denounced by each of the competent groups of the Entente and of the United States of America in accordance with the statutes and regulations of each of them. New associations recognized to be needed for the progress of the sciences and their application shall be established forthwith by the Allies and the United States with the contingent co-operation of neutrals.
4. The Governments of the allied countries and of the United States shall refrain from sending delegates to any international assembly at which representatives of the Central Empires would be expected to figure. It is desirable that the nationals of the Entente countries and of the United States should adopt the same line of conduct and not take part in any enterprise with which the nationals of the Empires would collaborate.
5. Inquiry should be made as to the steps to be taken to establish intimate collaboration between the Allies and the United States, particularly in the domain of allied science and in the publication of certain bibliographical works.

[2] Rejoice, we are winning.

[3] We do rejoice: may the right prevail.

British Medical Journal.

SATURDAY, NOVEMBER 2ND, 1918.

THE WORK OF THE COUNCIL.

The Central Council is the executive body of the British Medical Association; subject to the decisions of General and Representative Meetings, it is responsible for the management of the affairs of the Association. In addition to the control of routine work the Council has the duty of fashioning policy, with the aid of various standing and special committees, and of carrying policy into effect when approved by the Representative Body. Thus the functions of the Council are threefold: deliberative, advisory, and administrative. It is well that this should be restated from time to time, for the benefit of new members and others who are not familiar with the constitution of the Association. In the ordinary course the Council holds quarterly meetings at the head office in London, and it meets at least once on each day of the Annual Representative Meeting.

At the last quarterly meeting of the Council, on October 23rd, various matters of moment to the medical profession were discussed, and we propose to mention some of them briefly here. The important decision to lodge an appeal against the recent judgement in the Coventry case has already been reported in our columns, and is briefly referred to on page 497. For obvious reasons the merits of this case cannot be gone into now.

In view of the possibility of a general election in the near future, the Medico-Political Committee has had under consideration the action which could properly be taken in this matter by the Association. For the assistance of secretaries of Divisions in interviewing candidates for Parliament a paper has been drawn up indicating the subjects deemed by the Council to be the most important at the present time, from the standpoint of medical politics. The matters thus chosen relate, among others, to the proposed Ministry of Health, death registration and coroners' laws, the position and payment of Territorial Force and Special Reserve medical officers, the remuneration of women medical practitioners, the State registration of nurses, and the extension of medical benefit under the Insurance Acts to provide a complete medical service for insured persons. As for the hard case of officers of the Territorial Force and Special Reserve, R.A.M.C., who were called up at the outbreak of war, representations have been made by the Association both to the War Office and to the War Cabinet, urging that if nothing else is done to remedy injustice the gratuity to which these officers are entitled on demobilization should be increased and that its payment should not be deferred. It is not proposed to let this subject drop, and further steps are being taken by the Association to enlist the support of members of Parliament, in accordance with a suggestion by Commander Bellairs, M.P., who has already more than once raised this matter in the House of Commons. Here we may repeat that the Central Medical War Committee, impressed with the claim of the Territorial, Special Reserve, and R.N.V.R. medical officers for special consideration, has recorded its opinion that in the process of demobilization after the war these medical men should be released before any others. We understand that the Ministry of National Service has recently presented a memorandum to the War Cabinet recommending that the early stage of medical demobilization should be guided by this principle.

With regard to parliamentary elections generally, the principle laid down by the Representative Meeting twelve years ago remains in force—namely, that candidates should be invited to consult and co-operate with the Divisions of the British Medical Association in any matter that may come up in Parliament affecting the medical profession or public health. The Council has now strengthened this by its recent approval of an arrangement whereby medical members of Parliament may be brought into working contact with the Association as members of the Parliamentary Subcommittee. Beyond that point direct medical representation in Parliament is still somewhat in the air. The proposal to form a fund in support of the candidature of the right kind of medical man has been advanced several stages, but those who are engaged on this business find it hard to make headway against the political inertia of the profession.

The Representative Body last July authorized the Council to press upon the Government the formation of a Ministry of Health, and instructed the Council to seek the co-operation of the Royal Colleges, and such other medical bodies or corporations as shall interest themselves in the matter, in securing this effect. The Ministry of Health Committee reported to the Council on October 23rd that copies of that resolution had been forwarded to the Royal Colleges in England, Scotland, and Ireland, and to the Royal Faculty of Physicians and Surgeons of Glasgow. The Royal College of Physicians of London and the Royal College of Surgeons of England each replied in a favourable sense. The Royal Colleges of Edinburgh, in forwarding copies of the statements already issued by them, have replied to the effect that, in their view, the time is not ripe for proceeding with the formation of a Ministry of Health. The Royal Colleges of Ireland and the Royal Faculty of Physicians and Surgeons have not yet replied. Acting in accordance with the spirit of its instructions, the Ministry of Health Committee of the Association has recently got into touch with the corresponding committees of the English Royal Colleges and of the Royal Society of Medicine, and a conference is being held between the three bodies this week in order to discuss the basic principles upon which any Ministry of Health should be formed. This must obviously be of advantage to all concerned. While it may be doubted whether complete fusion is likely to take place between the three committees, a common working programme should be possible, as the outcome of this conference and of others to which we look forward in the near future. For technical reasons medicine may not be able to speak collectively upon this matter, but harmony of thought and purpose should be attainable.

In his quarterly report of the work of the Central Medical War Committee, the chairman, Dr. Verrall, gave the Council a sketch of the procedure for bringing about substitution in civilian medical practice. The task is admittedly very difficult, and there is no precedent for anything of the kind; but in order to meet the continued demands for medical men for the services the Committee has been obliged to tackle it. During the past three months an assessment has been made on many of the Local Medical War Committees for more medical men—first for those who, in the opinion of the Central Committee, can be spared by a distribution of their work among their neighbours, and, secondly, for those who can only be spared if a whole-time substitute is provided. Selection has

been made more difficult by the decision of the War Office to accept for military service only men under 49 and in Grade 1. With infinite trouble a scheme has been devised, the underlying object of which is to put the substitute and the absentee as far as possible on terms of financial equality; but every inducement will be given to both parties to make private arrangements. For those who cannot so agree a "standard arrangement" has been drawn up, the details of which are now in the hands of the Local Medical War Committees. The financial terms are framed with the idea of encouraging the substitute to keep up the practice to the best of his ability, while overcoming his natural dislike for a form of compulsory service which cannot be made inherently attractive. The plan is at present only on paper, but if the fighting goes on in the present style, it will soon have to stand the test of experience. If peace should intervene, no one, we are sure, would be better pleased than its authors.

THE ETIOLOGY OF INFLUENZA.

THERE is humour in the statement of the President of the Local Government Board that "he has instructed the various local authorities to take precautionary steps, and will not allow red tape to tie his hands, but will take immediately any remedial measures that may be recommended," and his further statement that he is calling a conference of medical authorities and bacteriological experts this week in order that the fullest research may be made into the cause and nature of influenza, in the hope of tracing the microbe and finding methods of destroying it. The humour is that the head of the ministry which is at present the only central authority in health matters should show such a curious misunderstanding of the functions of a central health ministry. At this late date to summon a conference of medical authorities and bacteriological experts and to instruct local authorities to take precautions is putting the cart before the horse. The local authorities have been taking precautions and are ready and willing to make them more effective. What they want is better information. The epidemic which began last spring, though it died down in the early autumn, gave ample warning of what might not improbably follow, for the history of influenza affords many instances of a recrudescence at the beginning of the winter. We conceive it to be a chief duty of a central health authority to institute investigations into the nature of epidemic diseases by every means available—that is to say, in the laboratory, at the bedside, and by the early collation of statistics. Apparently the Local Government Board has not made use of its opportunities during the last six months and can make no contribution to our knowledge in any one of these directions.

It is customary to give lip service to the doctrine that influenza is a specific disease, as are measles and scarlet fever, and some may admit that it is possibly due to the same class of infective agent; but with each recurring pandemic the notion that it is a new disease revives, so that we find justification for the epigram of von Bergmann of Marburg, that the present epidemic would not be typical if the typical mistakes were not committed again this year. The severity of the present pandemic, the suddenness of onset in some cases, and the number of deaths from pulmonary complications—bronchitis, bronchiolitis, bronchopneumonia, and pneumonia—which it is producing, have again led to the suggestion that the disease cannot be influenza, but some other and more lethal infection. This is only because we have forgotten how severe a disease influenza may be. Peacock,[1] writing of the epidemic of 1847, said that cases complicated by what he called acute capillary bronchitis were always very severe in character, and in debilitated persons proved fatal in a large proportion of cases. Again, the suddenness of onset in this epidemic—persons being taken ill in the street—has been supposed to be something new, but Symes Thompson, writing of the epidemic of 1889–90,[2] said: "In a number of recorded instances a violent attack of pain has been the first intimation, so severe sometimes as to cause the person to fall down under the impression that he has been struck. In others, wild transient delirium has ushered in the symptoms; in children delirium was almost the rule."

Another reason assigned for looking upon the epidemic as something other than influenza was that acute nasal catarrh was rarely observed during the summer. Naso-laryngeal catarrh is now common, and Sofrè, writing on the summer epidemic in Italy, refers to the constancy of respiratory complications, such as catarrh of the larynx, trachea, and bronchi in ordinary cases and diffuse moist bronchitis in severe cases. The very name "Spanish disease" is not new, for the term was used as far back as the sixteenth century.

The suggestion that the war and the privations caused by it are in some way responsible for the severity of the pandemic will not hold water. The disease has been little, if at all, more severe in Germany and in Austria than in this country, where the restriction of food has been much less, or in South Africa, where it has been inappreciable. Such influence as the war has had is to be seen in the armies, and is to be traced to the congregation of large numbers of men in huts and billets, and in crowded transports. It is fresh evidence, if that were needed, that the infection is disseminated by personal contact under conditions in which good ventilation is difficult or impossible. As is well said in an admirable review contained in the *Medical Supplement*[3] (compiled by the Medical Research Committee), epidemiologically the extreme contagiousness of the disease has been proved to be due to its aërial convection—namely, by means of the "drop-infection" from person to person and not by transportation of the virus through the air at large. The same review shows also that there is at present no certainty as to the real nature of the virus. The *Bacillus influenzae* isolated by Pfeiffer in 1892—that is, when the pandemic of 1889–90 had nearly disappeared—has been accepted as the true virus, in spite of the fact that practically it is not pathogenic to animals, that it was not found in widespread localized outbreaks, and that other organisms were found in many of them. The majority of the experts present at the conference summoned by the Director-General of the Army Medical Service expressed, as was noted in the JOURNAL last week (p. 470), considerable doubt as to the primary etiological significance of Pfeiffer's bacillus, and considered that the existence of some as yet undiscovered virus must be regarded as possible. The conference recognized that this bacillus is very frequently present in this pandemic and plays an important part in the production of the symptoms and complications of the disease, but went

[1] *Quain's Dictionary of Medicine.* First edition. 1884.
[2] *Influenza: A Revised Edition of "Annals of Influenza" by Theophilus Thompson, M.D., F.R.S.* By E. Symes Thompson. London, 1890.
[3] To the October issue of this periodical, and to advance proofs of the November issue which we owe to the courtesy of the Secretary of the Medical Research Committee, we are indebted for many of the references in this article. (H.M. Stationery Office. To be purchased through any bookseller. 1s. net each number.)

on to point out that the organisms most frequently associated with it and chiefly responsible for the gravity of the secondary pulmonary complications are pneumococci and streptococci. The author of the review from which we have already quoted sums up the matter by stating that *post-mortem* observations leave no doubt that the bacillus of Pfeiffer when present does not play any more important part than the ubiquitous diplo-streptococci. Though secondary in point of time these streptococci, some forms of which, at least, are haemolytic, are apparently primary in deciding the fatal issue, and seem to be transmissible from man to man equally with the main virus.

The idea that the severity of an epidemic of influenza is due to something in the nature of symbiosis is borne out by the observations made in the cases of New Zealand soldiers by Lieut.-Colonel Macdonald and his colleagues, whose paper we print this week. Apparently a considerable proportion of these cases were complicated by influenza since Pfeiffer's bacillus was found in 29 of 40 cases in which the sputum was carefully examined. It may be well to mention for the benefit of less experienced observers that a rash like measles, or more rarely like that of scarlet fever, has been seen recently in cases of influenza in this country and on ship board. Thompson notes that a rash was observed in a certain small proportion of cases in the epidemic of 1889-90. He speaks of it as "resembling that of measles or scarlatina, erythematous or papular in character, and generally described as 'rose-coloured,' disappearing on pressure, and lasting from one to four days, and usually followed by some desquamation." It appeared usually on the second or third day, and affected the face and neck, but sometimes extended to the trunk and limbs.

Of the suggestion that the true virus is a filter-passer it has been said that it is only a cloak to our real ignorance as to its nature, but the results of some recent experiments by Nicolle and Lebailly communicated to the Académie des Sciences, Paris, the other day by Professor Roux, Director of the Pasteur Institute, afford good evidence that a filter-passing virus does exist. The material used, consisting of the bronchial expectoration, very rich in a great variety of bacteria, of a patient who had been suffering from influenza for three days, was introduced into the conjunctival sac and nose of two monkeys—a Chinese bonnet monkey and a *Macacus cynomolgus*. In the case of the bonnet monkey on the sixth day, and of the macaque on the fifth day, the temperature rose to 40° C.; the fever persisted for three days. The bonnet monkey wasted, and showed marked depression; the macaque was less affected. The virulence of the secretions was proved by these experiments. The main experiments were made, on volunteers, with the filtered secretions. Filtration was performed as follows: the bronchial secretion, diluted with ten times the quantity of physiological salt solution, was thoroughly shaken (with beads) for five minutes, and then centrifugalized for a minute and a half. After decantation the clear upper layer of fluid was filtered through a Chamberland bougie under a pressure of 30 to 40 centimetres of mercury. In the first experiment one of the volunteers was injected subcutaneously with the filtrate; he suffered a typical attack of influenza, with headache and backache, the morning temperature being 39° C. (102° F.), 38° C. (100° F.), and 38.5° C. (101° F.) on successive days. Convalescence was not complete until after twelve days. In the second experiment, conducted in the same way, the volunteer on the sixth day began to suffer from a slight attack. Intravenous injections of the filtrate in other volunteers produced no result, nor did the subcutaneous injection of 3 c.cm. of the blood of the bonnet monkey on the first day. The intravenous injection of 3 c.cm. of the blood of a patient in the second day of a characteristic attack of influenza was negative also. The authors conclude that the infective agent of influenza is a filter-passing organism, and that the virus does not occur in the blood either in man or monkeys; Pfeiffer's bacillus, it should be noted, has occasionally been found in the blood.

The unanimous opinion of the members of the War Office conference, that inoculation with a suitable vaccine might be expected to be of value in the control of the incidence and severity of the epidemic, will have been read with interest. Its value is not affected by difference of opinion as to the specific importance of the *B. influenzae*, for deaths are in nearly all instances due to respiratory complications, and the vaccine contains a large proportion of pneumococcus as well as of the lethal streptococcus. Large quantities of this mixed vaccine are being prepared for the army and navy at the Royal Army Medical College and the Royal Naval College, but we have yet to learn that the medical department of the Local Government Board is taking the same course. The matter is all the more important and urgent because there is some ground for thinking that this mixed vaccine might be of service in the treatment of subacute cases, although its value in severe cases of secondary bronchopneumonia is not established.

INFLUENZA AND THE SHORTAGE OF DOCTORS.

The Central Medical War Committee is taking all steps in its power to meet the situation created by the epidemic of influenza, for the calls arising from it have greatly aggravated the shortage of civilian practitioners. The names of doctors recommended for commissions who practise in districts reported to be seriously affected by the epidemic have been temporarily withheld, and the Ministry of National Service has been asked to apply to the military authorities for assistance from R.A.M.C. officers stationed in such localities. Further, the Board of Education has been asked to encourage local educational authorities to release school medical officers from routine inspections during the epidemic, so that they may assist the general practitioners in areas in which depletion has been carried to such an extent that the practitioners are brought very near the breaking point. The men in those areas have carried on the work in the most gallant way, with hardly a word of complaint—a fact which is not perhaps fully appreciated, either by the public or the profession. We understand that in several districts assistant school medical officers have already been liberated for general work, with good effect. The Minister of National Service, in reply to questions in the House of Commons on October 29th, said that during the past year the arrangements for employing doctors under the Ministry, and all withdrawals of doctors from civil life for service in the Forces, had been made with full regard to the contingency of a widespread epidemic. Owing to the prevalence of influenza for some months past the calls on the civil medical profession had been heavy, and, simultaneously, severe fighting on a great scale on all the fronts had imposed additional strain on our medical resources. Concurrently with the increasing spread of influenza the number of doctors employed on medical boards had been reduced, and in order further to reinforce the doctors available for the civil population, medical examinations of recruits in advance had been suspended for the present, while the medical staffs of hospitals had been strengthened so far as resources permit. Sir

Auckland Geddes expressed his deep appreciation of the way in which the medical profession has co-operated with the Ministry in meeting unprecedented and often conflicting demands for medical personnel. He explained that, owing to the heavy casualties among R.A.M.C. officers, there is now a great demand for young fit doctors for the fighting line. The Ministry had therefore been compelled to call up certain young civilian practitioners, and by arrangement with the Admiralty a number of young naval surgeons had gone to France. He added that efforts were also being made to secure some of the older and less fit R.A.M.C. officers for civilian practice, but the pressure was very great.

FRENCH ADVICE ON THE PREVENTION OF INFLUENZA MORTALITY.

THE committee appointed recently by the Académie de Médecine de Paris to consider the prophylaxis of influenza has presented its report. In dealing with individual prophylaxis it points out that as the disease is transmitted chiefly through the upper respiratory passages, the chief safeguard is minute attention to the disinfection of the mouth and nose. In an epidemic centre mouth-washes should be used twice a day, the simplest and best method being to wash the mouth and gargle the throat with a glass of warm water to which a little of a solution of chlorinated soda (about 20 drops of the *B.P.* preparation) has been added. For the toilet of the nose an ointment of resorcin 1 per cent. in vaseline was recommended. The face and mouth should be washed after each meal, and over-fatigue and exposure to cold avoided. An order was issued some time ago in the French army directing that influenza should be looked upon as any other infectious disease, and that all persons suffering from it should be isolated. The Minister of the Interior has now directed that the prefects should request all doctors voluntarily to notify influenza, and to advise isolation of the sick and disinfection of rooms and bedding. While it is recognized that such disinfection may be practically impossible in many cases, it is considered that it ought to be resorted to in severe cases and in those complicated by pneumonia or bronchopneumonia. Experience of local outbreaks proved that isolation could give very good results, and in a private house, if nothing better can be done, a room should be reserved for the sick person, and the nurse and members of the family attending on the patient should put on a blouse when going into the sick-room and take it off when coming out. The recommendations as to collective prophylaxis contain nothing very novel. They include the prevention of overcrowding and the avoidance of places of public entertainment. As to tramways and underground railways, the committee despair of preventing overcrowding, but advise that the carriages should be frequently washed and disinfected. The value of the closure of schools in towns is doubted, except for a few days to allow thorough cleansing and disinfection. With regard to country districts, however, the converse opinion is strongly expressed because the school is often the centre for the diffusion of the infection. It will be worth while to close country schools so soon as the first cases appear. Instructions are given as to the precautions which should be taken in hospitals. The number of beds in a ward should be decreased rather than increased, and cases of influenza should be placed in special wards and uncomplicated cases separated from those which are complicated. Cases presenting complications should be grouped according to the nature of the complication, but this is admitted to be a counsel of perfection; as a practical measure of some value it is advised to place curtains or tall screens between the beds. Men who have been gassed are particularly liable to contract the infection and very special care should be taken in their cases. Convalescent cases should not be at once discharged, but kept under observation in buildings adjacent to the hospital. Great importance is attached to the periodical disinfection of influenza wards and to the destruction of sputa. Visitors should not be admitted unless the patient is in extreme danger. For their own protection and in order that they may not serve as transmitters of the disease or its complications, the staff of the influenza wards should wear blouses and attend to the antisepsis of the hands and the rhinopharynx. The face masks employed in the American hospitals in France are commended; they consist of about half a yard of gauze, folded like a triangular bandage, covering the nose, mouth, and chin, and tied at the back of the head. In out-patient departments all patients with cough should be kept separate and ambulance cars should be thoroughly disinfected.

STREPTOCOCCIC EMPYEMA.

IN connexion with the grave pulmonary and pleuritic complications of the present pandemic of influenza Harlow Brooks and Cecil's[1] report of 300 cases of pneumonia with eighty empyemas at Camp Upton, New York, during the last winter (October 7th, 1917, to April 20th, 1918) is of great interest. It appears, indeed, that history is repeating itself. Out of 283 cases of pneumonia in which the sputum was carefully examined, 136 were streptococcic and 137 pneumococcic, the *Bacillus influenzae* of Pfeiffer not being mentioned in the paper. There were 49 streptococcic empyemas with a mortality of 30, or 61 per cent.; 15 pneumococcic empyemas, 15 sterile empyemas, and one empyema giving *Staphylococcus aureus*. In 9 cases a streptococcic empyema followed a pneumococcic pneumonia. In 36 cases the empyema was due to a haemolytic streptococcus, and in 4 to a non-haemolytic form, *Streptococcus viridans*. It is interesting here to refer briefly to Kinsella's[2] conclusions from his investigations with Swift on non-haemolytic and haemolytic streptococci; working with the complement fixation test it was shown that no two of 28 strains of non-haemolytic streptococci were exactly identical, whereas 28 strains of haemolytic streptococci were nearly identical. The heterogeneous non-haemolytic streptococcus, while common in the mouths of normal people, invades the tissues and causes disease only under exceptional conditions of pre-existing infection or lowered resistance, such as the growth of *Streptococcus viridans* on the injured cardiac valves in subacute bacterial endocarditis. The haemolytic streptococcus, on the other hand, is highly pathogenic; for example, it causes puerperal sepsis, milk-borne epidemics, and has recently played a part in the etiology of the bronchopneumonia and empyema following measles seen in some of the army camps in America. This, however, was not the sequence of events at Camp Upton, where influenza, tonsillitis, and other mild infections in a considerable number of cases preceded the onset of the lobar pneumonia (usually pneumococcic) or bronchopneumonia (usually streptococcic) and empyema. But it also appeared that a streptococcic empyema might follow a primary streptococcic bronchopneumonia, the interstitial form of bronchopneumonia recently described by Cole and MacCallum usually being associated with a streptococcic empyema. Clinically the streptococcic empyema occurs early, or even simultaneously with the lung infection, the diagnosis on an average being made on the fifth day after admission, and the signs and symptoms differ from those of ordinary empyema. For diagnostic purposes reliance was placed on exploration with a hypodermic syringe, skiagraphy being second, and dullness on percussion third in order of value. This recalls Gee's dictum that the bare suspicion of a pleuritic effusion, however small it may seem to be, is a sufficient reason for exploring the chest with a fine needle. Exhaustion and increased rate of respirations pointed to the formation of an empyema; but rigors, stabbing pleuritic pain, abdominal rigidity, and a septic temperature were generally absent, whereas

[1] Harlow Brooke and R. L. Cecil: *Arch. Int. Med.*, Chicago, 1918, xxii. 269–289.
[2] R. A. Kinsella: *Journ. Exper. Med.*, Baltimore, 1918, xxviii. 181–192

skodaic resonance and good transmission of breath and voice sounds over the site of a considerable pleuritic effusion were frequently noted. Total and differential leucocyte counts were disappointing in the diagnosis of empyema, and examination of the urine did not give any assistance. Blood cultures were positive in 3 out of 20 cases of empyema, one showing *Streptococcus haemolyticus* and 2 pneumococcus; 2 of these 3 patients recovered. Pleuropericarditis was common and pericarditis (the inflammation spreading from the parietal to the visceral layer) was found in 9 out of 27 necropsies, the fluid resembling that in the pleura both in appearance and bacteriologically. In the early stages the pleuritic exudate was usually light yellow, often with a greenish tinge, and later on became purulent. Acute generalized peritonitis and acute suppurative meningitis were seen in two cases of streptococcic infection; but in spite of the virulence of the infection it was usually confined to the lungs and pleurae, with occasional implication of the pericardium, and therefore appeared not to be essentially a septicaemia. Early surgical treatment in pneumococcic empyema is advised, but in the case of the streptococcic empyemas experience showed that patients operated upon early died almost without exception, whereas those in whom the operation had been postponed until the pus had become thick and gelatinous, frequent aspirations having been made in the meantime, have recovered. The surgical treatment of the empyemas due to haemolytic streptococci not unnaturally gave much better results when the cases were placed exclusively under the care of a surgeon who made a special study of this complication.

THE QUATERCENTENARY OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Though the public anxieties of the times, and the bereavements which hardly any family has escaped, made it inappropriate to celebrate by any festival the quatercentenary of the Royal College of Physicians of London, which fell on September 23rd, the President, at the next following meeting of the College—the delivery, on St. Luke's day (October 19th), of the Harveian Oration, given every year according to Harvey's direction—took occasion to recall the circumstances of the foundation of the College. At the same time he presented to its library a rare volume, the 1492 edition of the *Rosa Anglica* of John of Gaddesden, which had once been in the possession of Dr. John Chambre, one of the six Fellows who constituted the College when it was founded by the charter of Henry VIII in 1518. He also had the pleasure of receiving a Latin letter signed on the actual anniversary by Fellows of the College now serving with the armies in France. Dr. Norman Moore continues in his own person the traditions of learning and scholarship by which the College over which he now presides has been distinguished for four centuries, and those who are acquainted with his command of our flexible language will be ready to believe that his address was as agreeable to hear as they will find it delightful to read in the full version published at p. 491. The College has great traditions, which its President to-day is specially competent worthily to maintain, and we make no doubt that under his guidance it will take a great share in moulding the legislation now in contemplation, ever stimulating us all, to quote words from Harvey's deed of gift, to remember that "*Concordiâ res parvae crescunt, discordiâ magnae dilabuntur.*"

PUBLIC HEALTH IN ENGLAND AND WALES.

The Supplement to the Forty-seventh Report of the Local Government Board, containing the report of the medical officer for 1917–18, has just been issued.[1] In his review of the public health of England and Wales during the twelve months ending March 31st last Sir Arthur Newsholme introduces an account of the improvements in health and life that have occurred since the Local Government Board was formed in 1871. His reason for making this departure will be plain to all who have followed the course of recent events. Never before in the history of this country has the importance of national health been so well recognized. In his survey of forty-seven years' progress Sir Arthur Newsholme, however, avoids the more controversial aspects of possible administrative changes. While admitting the need for simplification of administrative machinery and for extension of public health and medical work, he believes that an important obstacle to further advance is lack of knowledge of present methods and of what has already been done by local authorities in securing better conditions of life for the people. The improvement, as shown, for instance, by the death-rate figures and the greatly reduced prevalence of enteric fever, has, of course, been very great; it can be traced to a number of interacting social and sanitary causes. More than a quarter of a million fewer persons die annually than would die if the experience of the decennium 1871–80 had continued. This implies an enormous annual saving in sickness and disability, and in poverty as well, for one of the chief causes of poverty is sickness. On the whole Sir Arthur Newsholme considers that the results achieved by local authorities justify the expenditure incurred, but the "combination of smaller authorities is needed to avoid in the future redundant small schemes and Lilliputian administrative arrangements." There remains, however, a vast amount of preventable mortality and sickness, and of disability resulting from preventable sickness. The needs of the future are grouped under three chief headings: (1) Research into the causation of disease on a much larger scale than has hitherto been attempted; (2) extension of communal action for the prevention and treatment of disease and more complete training of the medical profession for this work; (3) simplification and strengthening of administrative machinery. As to the first of these, the list of diseases awaiting intensive investigation is long. As to the second, Sir Arthur Newsholme advocates better training in preventive medicine for all medical students and a three months' course of training in some special branch of medical knowledge once in every third year for all medical practitioners. The teaching of medicine, he holds, should be much more physiological and hygienic than it is at present, in order to bring about the ideal condition in which every doctor would be a medical officer of health within the range of his own practice. The third heading leads directly to the question of a Ministry of Health, and upon this subject a number of irreproachable opinions are expressed. The remainder of the report and the appendices are largely given up to a review of the year's work in relation to maternity and child welfare and the prevention of acute infectious diseases.

[1] Cd. 9169. London: H.M. Stationery Office. Price 1s. 3d. net.

THE COVENTRY CASE.

We announced in our last issue that the Council of the Association has decided to appeal against the judgement delivered by Mr. Justice McCardie in the action of Pratt and others and the British Medical Association and others, which was fully reported in the Supplement. The case, therefore, remains *sub judice* and comment is precluded. It is nevertheless permissible to state that the action lay in three branches—namely, conspiracy, libel, and slander—and that (in the words of the judge) the claim for conspiracy was of infinitely the greatest moment, as the points thereby raised touch every profession, trade and pursuit. It is especially in consequence of the finding of conspiracy, which overshadows all other matters, that an appeal was decided to be entered, it being felt impossible for the British Medical Association to allow a judgement to stand unchallenged which condemns them in damages for malicious conspiracy. On October 25th the case came up again for argument before Mr. Justice McCardie, upon points relating to the judgement to be entered and the

terms of injunction. The proceedings had not concluded when the judge rose, and the matter, therefore, stands over for further discussion, as reported on p. 502.

A CONFERENCE is taking place this day (Friday) between the Minister of National Service and representatives of the central professional committees, with regard to medical demobilization. The Central Medical War Committee, feeling that special consideration ought to be shown to the personal claims of officers who were suddenly called up for service at the outbreak of war, has already forwarded a resolution to this effect to the Ministry of National Service, for transmission to the Inter-Departmental Committee on Demobilization.

MR. LOUIS ALBERT DUNN, surgeon to Guy's Hospital, left estate of the net value of £56,634. He bequeathed to Guy's Hospital the gold medal awarded by the London University when he took his degree as Master in Surgery, being the first of its kind ever won by a Guy's man. The residue of his property was left in trust for his two brothers for life, with ultimate remainder to Guy's Hospital for the Medical School.

Medical Notes in Parliament.

R.A.M.C.(T.) Promotions.—Mr. Macpherson, in reply to Sir Francis Blake, on October 29th, said that in accordance with the recommendations of the Committee on Promotion of Officers in the Special Reserve, New Armies, and Territorial Forces, a seniority list had been prepared for all officers of the Royal Army Medical Corps Territorial Force other than the administrative and *à la suite* staffs of Territorial Force general hospitals and the Sanitary Service. This list was included in the *Army List*. The establishment authorized was: Colonels, 19; lieutenant-colonels, 107; and the existing numbers of officers of these ranks were—colonels, 8; lieutenant-colonels, 75. Promotion to the rank of major being governed by a time qualifying period, the establishment for this rank was not limited. The actual promotions consequent upon the determination of the establishments were under consideration, and would be published as soon as possible after the receipt of the information which it was essential to obtain from the theatres of war where the officers concerned were serving.

Pay Allowances and Gratuities: R.A.M.C.(T.).—In reply to a question asking whether the differences in pay, allowances and gratuities between contract officers of the R.A.M.C. and officers of the R.A.M.C.(T.) would be done away with, the Financial Secretary to the War Office said that he could add nothing to the reply made on February 21st. On that occasion Mr. Forster said the matter had been fully considered by the Cabinet Committee on Officers' Pay, which decided not to make any change. He added that Territorial officers got the same emoluments as regular officers, and, like them, would get the new children's allowances at full rates in the junior ranks, while officers serving under special contract would get half rates only.

Honorary Commissions for Women Doctors.—Sir Philip Magnus asked Mr. Macpherson, on October 22nd, whether having regard to the fact that women doctors serving in military hospitals discharged similar duties and received the same pay as men doctors, and were entitled to wear the R.A.M.C. badge, he would take steps to rectify the anomaly of their being refused even honorary commissions or the right to wear badges of rank which would be helpful to them in maintaining discipline. Sir Philip also asked whether it could be arranged that these ladies should obtain equivalent relief from income tax to that granted to men doctors under the service rate. Mr. Macpherson replied that the first question was under reconsideration, the second should have been addressed to the Treasury.

R.A.M.C. Officers in India.—In reply to Colonel Yate, on October 29th, who inquired as to the relief of time-expired R.A.M.C. officers in India, Mr. Macpherson said that twenty-four officers had been sent to India in relief of a similar number time-expired, and two were awaiting passage. Until the relieved officers returned home it was impossible to spare further officers for the purpose, as the system involved the loss of the services of the officers for a period of two or three months.

Insurance.—Sir Edwin Cornwall stated, on October 28th, that though since 1911 some 20,000 tuberculous persons had received dispensary and domiciliary treatment, this left a regrettable number of cases for which accommodation was lacking. The war had interfered with building operations. On October 24th he stated that there was no intention at present to introduce legislation to amend the provision as to the income limit. The circular issued in June pointing out that insured persons whose income exceeded £160 a year would lose medical benefit merely defined the legal position.

Midwives Bill.—The Midwives Bill has passed through the House of Commons, the clause preventing county councils from making any fresh delegation being retained. It was read a second time in the House of Lord on October 29th.

THE WAR.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

SURGEON-SUBLIEUTENANT T. CARLYLE, R.N.V.R.

Surgeon-Sublieutenant Thomas Carlyle, R.N.V.R., died of pneumonia in St. Bartholomew's Hospital on October 21st, aged 24. He was the only son of Lieut.-Colonel Carlyle.

ARMY.

Killed in Action.

CAPTAIN C. L. DOLD, R.A.M.C.

Captain Cedric Lewis Dold, R.A.M.C., was reported as killed in action, in the casualty list published on October 22nd. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1914, took a temporary commission as lieutenant in the R.A.M.C. on August 12th, 1914, and was promoted to captain on completion of a year's service. He was attached to the South Wales Borderers (24th Foot) when killed.

CAPTAIN J. JAMES, R.A.M.C.

Captain John James, R.A.M.C., attached Highland Light Infantry, was reported as killed in action, in the casualty list published on October 22nd. He was educated at King's College, London, where he gained the Warneford medical entrance scholarship, and the Sambrooke medical exhibition and second year scholarship, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1903, also graduating M.B.Lond. in 1904, and B.S. in 1906. After acting as assistant house-surgeon and as senior house-surgeon at Westminster Hospital, as house-physician at the Seamen's Hospital, Greenwich, and as resident medical officer of Westminster Dispensary, he entered the R.A.M.C. as lieutenant on February 4th, 1908, took the De Chaumont prize in hygiene at the R.A.M. College, and became captain on August 4th, 1911.

CAPTAIN E. L. JONES, R.A.M.C.

Captain Evan Laurence Jones, R.A.M.C., was reported as killed in action, in the casualty list published on October 22nd. He was educated at Guy's Hospital, took the diploma of L.M.S.S.A. in 1913, and was in practice in Fulham till he took a temporary commission as lieutenant in the R.A.M.C. in 1916, being promoted to captain after a year's service. He was attached to the Highland Light Infantry when killed.

CAPTAIN J. G. MACNEILL, M.C., C.A.M.C.

Captain James Grant MacNeill, M.C., C.A.M.C., who was killed in action on October 12th, was born in St. Stephen, N.B., Canada, on October 17th, 1893. He graduated in medicine at Queen's University in 1916, and left Canada in May of that year. He went to France in August, 1916, and served with a field ambulance and as regimental medical officer. He was awarded the M.C. in July, 1918.

CAPTAIN P. J. O'REILLY, M.C., R.A.M.C.

Captain Patrick Joseph O'Reilly, M.C., R.A.M.C., attached East Yorkshire Regiment, was returned as killed in action, in the casualty list published on October 26th. He took the diplomas of L.R.C.P. and S.I. in 1914, joined the R.A.M.C. as temporary lieutenant on October 21st, 1914, and was promoted to captain a year later. He received the Military Cross on November 14th, 1916.

CAPTAIN J. J. TOUGH, R.A.M.C.

Captain John James Tough, R.A.M.C., was killed instantly on October 7th in an advanced dressing station in France whilst attending to the wounded. He was the last surviving son of Dr. W. R. Tough of Accrington, and was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1910. He obtained a temporary commission in the R.A.M.C. in May, 1916, and after serving in India and Italy was transferred to France, where he had only been ten days when killed. He leaves a widow and a young daughter. His younger brother, Captain Arnold J. Tough, L.D.S., 11th East Lancs., was killed leading his men on July 1st, 1916.

Died of Wounds.

MAJOR S. S. B. HARRISON, M.C., R.A.M.C.

Major Stanley Sextus Barrymore Harrison, M.C., R.A.M.C., died of gas poisoning in France on October 10th. He was educated at Guy's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1914. He had long been a Territorial officer, and went to the front in the early months of the war. Later he passed into the R.A.M.C. His whole service was spent on the Western front, and he died from the effects of a high explosive and gas shell, which landed in the door of his dug-out. He was the youngest son of Mr. Henry Barrymore Harrison of Anerley, S.E., and brother of Lieut.-Colonel C. B. Harrison, I.M.S.ret. He won the Military Cross last year.

CAPTAIN A. A. PARKER, M.C., C.A.M.C.

Captain A. Allan Parker, M.C., C.A.M.C., who died of wounds on October 12th, was born on October 4th, 1892, at Mimico, Ontario. He graduated in medicine at the University of Toronto in 1914. He sailed from Canada in May, 1916, and after serving in England went to France in December, 1916. He was on the strength of a Canadian field ambulance, serving for short periods as M.O. with the 1st Canadian H.A. and a Canadian casualty clearing station. He was awarded the M.C. in October, 1917.

Lost at Sea.

MAJOR C. W. DUGGAN, R.A.M.C. (RET.).

Major Charles William Duggan, R.A.M.C. (ret.), Reserve of Officers, was lost at sea, through enemy action, on October 10th, aged 51. He was born on October 14th, 1866, and educated at Edinburgh University, where he graduated M.B. and C.M. in 1887, subsequently studying at Vienna, Prague, and Paris. After acting as assistant to the professor of physiology at Edinburgh he entered the R.A.M.C. as surgeon-captain on July 28th, 1891, becoming major on July 28th, 1903, and retiring on July 28th, 1909. He served in the West African campaign of 1893, and after his retirement was employed at Lincoln.

CAPTAIN D. BURNS, R.A.M.C.

Captain Digby Burns, R.A.M.C., was reported as drowned, in the casualty list published on October 22nd. He took the diplomas of L.R.C.P. and S.I. in 1912, after which he went into practice in Dublin, till he took a temporary commission as lieutenant in the R.A.M.C. in January, 1916, being promoted to captain after a year's service.

CAPTAIN R. E. LEE, R.A.M.C.

Captain Robert Ernest Lee, R.A.M.C., was reported as drowned, in the casualty list published on October 23rd. He was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., and B.A.O. in 1910, and M.D. in 1911. After acting as senior house-surgeon of Bootle Borough Hospital, he went into practice at Blackrock, co. Dublin. He took a temporary commission as lieutenant in the R.A.M.C. on August 15th, 1914, and was promoted to captain after a year's service.

CAPTAIN M. MURPHY, R.A.M.C.

Captain M. Murphy, R.A.M.C., was reported as drowned, in the casualty list published on October 23rd. There are two temporary officers of this name and rank in the R.A.M.C.

LIEUTENANT R. J. BASSETT, R.A.M.C.

Lieutenant R. J. Bassett, R.A.M.C., was reported as drowned, in the casualty list published on October 23rd. He had only recently qualified, and took a temporary commission as lieutenant in the R.A.M.C. early this year.

Died on Service.

COLONEL G. H. VAN ZYL, S.A.M.C.

Colonel G. H. Van Zyl, South African Medical Corps, Commandant of Maitland Military Hospital, died of pneumonia, aged 41, on October 10th, at Wynberg, Cape Province.

MAJOR R. H. MCGILLICUDDY, M.C., R.A.M.C.

Major Richard Hugh McGillicuddy, M.C., R.A.M.C., died of pneumonia at sea on October 20th. He was the younger son of the McGillicuddy of the Reeks, and was educated at University College Hospital, London, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1911, after which he took up the post of district medical officer of No. 7 Ward, Borough of St. Pancras. He joined the R.A.M.C. as a temporary lieutenant on July 4th, 1915, was promoted to captain after a year's service, and to an acting majority in the beginning of this year. He received the Military Cross on January 14th, 1916.

MAJOR J. H. MCNICOL, M.C., R.A.M.C.

Major John Hart McNicol, M.C., R.A.M.C., is reported as having died recently. He was the son of Mr. John McNicol of Dennistoun, Glasgow, and was educated at Glasgow High School and University, where he graduated M.B. and Ch.B. in 1909, subsequently filling the posts of house-surgeon of Glasgow Royal Infirmary and of assistant to the professors of pathology and of materia medica in that institution. He took a temporary commission as lieutenant in the R.A.M.C. on October 10th, 1914, was promoted to captain after a year's service, and subsequently to an acting majority. He had twice been mentioned in dispatches, received the Military Cross on July 3rd, 1915, and was recently attached to the Suffolk Regiment.

MAJOR C. W. C. MYLES, M.C., R.A.M.C.(T.F.).

Major Charles William Chester Myles, R.A.M.C.(T.F.), died of pneumonia on active service in Palestine on October 19th. He was born on November 5th, 1885, the younger son of the late Dr. James P. Myles of Birr, Ireland, and was educated at Trinity College, Dublin, where he graduated as B.A. in 1908, and as M.B., B.Ch., and B.A.O. in 1912, after which he went into practice at Merthyr Vale, Glamorgan. Always keen on military work, he had been a member of the Dublin University O.T.C. since its inception, and shortly after removing to South Wales he was gazetted lieutenant in the 2nd Welsh Field Ambulance (T.F.). He joined his unit in August, 1914, and after training in England embarked for the Dardanelles in July, 1915, having previously been promoted captain. He served in the peninsula until the evacuation, and since that time had been continuously in Egypt and Palestine. For his work at the first battle of Gaza he was mentioned in dispatches, and awarded the Military Cross (January, 1918). He was a most zealous and hard-working officer, and his promotion to the rank of major in July last was well deserved. Overwork had twice within the past twelve months caused a serious breakdown in health, and he only returned to duty for the last time about the middle of September. He succumbed to pneumonia on October 19th, when a most promising career was brought to a close.

MAJOR T. C. RUTHERFOORD, I.M.S.

Major Thomas Carrie Rutherfoord, Indian Medical Service, died of malaria on active service abroad on October 18th, aged 39. He was born on November 13th, 1878, the eldest son of the late T. B. Rutherfoord, and educated at St. Thomas's Hospital and Durham University, where he graduated M.B. and B.S. in 1902, also taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in the same year. He entered the I.M.S. as lieutenant on January 31st, 1903, became captain on January 31st, 1906, and major on July 31st, 1911, and at the time of his death was acting as lieutenant-colonel in command of a field ambulance. Before the war he was serving in civil employment in the Central Provinces as civil surgeon of Bilaspur.

CAPTAIN F. O. SPENSLEY, R.A.M.C.

Captain Frank Oswald Spensley, R.A.M.C., died of pneumonia at Burden Military Hospital, Weymouth, on October 23rd. He was the youngest son of the Rev. James Spensley, was educated at St. Thomas's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1907. After acting as house-surgeon of Lowestoft Hospital he took the post of senior assistant medical officer of the Darenth industrial colony at Dartford, Kent. He took a temporary commission as lieutenant in the R.A.M.C. in November, 1916, and was promoted to captain after a year's service. He had served at Salonica up till November, 1917, when he was invalided home, and had latterly been attached to the R.A.F. at Blandford.

Wounded.

Lieut.-Colonel W. W. Boyce, R.A.M.C.
Major H. C. Adams, R.A.M.C.(T.F.).
Major J. F. Burgess, Canadian A.M.C.
Major W. W. Wells, R.A.M.C. (temporary).

Captain W. A. Coats, R.A.M.C. (temporary).
Captain W. E. R. Dimond, R.A.M.C. (temporary).
Captain W. E. Elliot, R.A.M.C.(S.R.).
Captain J. M. Elliott, R.A.M.C.
Captain M. L. Farmer, R.A.M.C. (temporary).
Captain D. A. Gardiner, R.A.M.C. (temporary).
Captain H. L. Garson, R.A.M.C.(S.R.).
Captain E. W. D. Hardy, M.C., R.A.M.C. (temporary).
Captain R. McC. Hill, D.S.O., R.A.M.C. (temporary).
Captain S. Hodgson, M.C., R.A.M.C. (temporary).
Captain G. Moore, R.A.M.C.(T.F.).
Captain J. D. Stewart, Canadian A.M.C.
Lieutenant F. L. Richard, R.A.M.C.(S.R.).

DEATHS OF SONS OF MEDICAL MEN.

Campbell, Donald Rhodes, Lieutenant Royal Navy, youngest son of Dr. D. Campbell of Brixton Hill, drowned recently on service, aged 22.

Cotes, Digby Charles Bathe, Captain Prince of Wales North Staffordshire Regiment, only son of Dr. D. F. B. Cotes of Burton-on-Trent, died of wounds October 15th. He was educated at Ellesmere College, Shropshire, and matriculated at Trinity College, Dublin. He got his commission on September 1st, 1914, was promoted to lieutenant on May 1st, 1915, served in Gallipoli, where he was severely wounded on August 8th, 1915, served in another battalion in France, came home on sick leave in March, 1918, and had only recently returned to the front.

Gardner, Norman, Second Lieutenant Duke of Wellington's West Riding Regiment, youngest and last surviving son of the late Dr. John Gardner of Helensburgh, killed October 2nd.

Johnston, Landal, Lance-Corporal Argyll and Sutherland Highlanders, youngest son of Dr. Johnston of Methven, Perthshire, died of wounds, October 15th, aged 19.

Lane, J. D. A., Midshipman Royal Naval Reserve, only son of Captain H. Angell Lane, R.A.M.C., of Chelsea, lost at sea, on duty, on October 15th, aged 19.

Lundie, R. C., D.S.O., Major Royal Engineers, only son of Dr. R. A. Lundie of Edinburgh, killed in action on October 14th/15th. He was educated at Edinburgh Academy and at Christ's College, Cambridge, was a civil engineer by profession, and was in Canada when war was declared. He joined the R.E. Special Reserve as lieutenant on January 27th, 1914, joined for duty on August 19th, 1914, went to the front in July, 1915, was promoted successively to captain and major, had twice been mentioned in dispatches, and received the D.S.O. in June, 1917.

McCreery, Mona J. N., Captain Royal Dublin Fusiliers, son of the late Colonel N. McCreery, R.A.M.C., died suddenly of pneumonia at the Military Hospital, Grimsby, on October 21st, He got his first commission on August 15th, 1914.

Quayle, Rupert Charles, Second Lieutenant Leicestershire Regiment, aged 25, youngest son of Colonel W. A. Quayle, I.M.S., ret., of Strangford, co. Down, whose death in action we announced last week, was educated at Charterhouse, where he held a scholarship for four years. In May, 1918, while at school, he gained a scholarship at Christ Church, and in December of the same year he gained an open scholarship at Queen's College, Oxford. He obtained his commission in November, 1917, and went out to France early in January, 1918.

Scotland, D. Lothian, Lieutenant Machine Gun Corps, aged 23, died of gas shell wound, the eldest surviving son of Lieut.-Colonel D. W. Scotland, I.M.S.(ret.), of Colinton, Midlothian. He received his commission in the Royal Scots in October, 1914, from the O.T.C. of Edinburgh University, where he was an engineering student. He served in France with the Royal Scots during the winter of 1915–16, and was transferred to the Machine Gun Corps on its institution. He was severely wounded in the battle of the Somme in 1916. He returned to the front in April of this year, and had been engaged in heavy fighting. His younger brother, who is a lieutenant in the Indian army, was wounded in Mesopotamia last year and is now serving in Palestine.

Walters, Herbert Aidan, Second Lieutenant Royal Air Force, second son of Rev. F. W. Walters, M.A., M.R.C.S., L.R.C.P., District Surgeon, Ndwandwe, Zululand, killed accidentally in Flanders, April 7th, 1918, while flying. He was born at Anerley on October 17th, 1892, received his education at Michaelhouse, Natal, and entered the Union Civil Service in the Department of Justice. He was a nephew of the late Deputy Surgeon-General Mansfield, R.N., M.V.O., and of Dr. J. B. Walters of London, and had served in German South-West Africa as sergeant in the Natal Carabineers.

Young, James Christian Lawrence, General Staff Officer 3rd Canadian Division, son of Lieut.-Colonel James Young, R.A.M.C.(T.F.R.), of Alexandra Square, London, S.W., killed October 13th, aged 22.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

Bar to D.S.C.

Surgeon Alfred Robinson MacMullin, D.S.C., R.N., has been awarded a bar to the Distinguished Service Cross.

For services with the 63rd (Royal Naval) Division in France. He worked unceasingly day and night for three days to succour the wounded. Times without number, when the enemy shelling and machine-gun fire was at its worst, he walked about in the most exposed places attending to the wounded, being utterly indifferent to his own safety. The result was that the lives of many men were saved who might otherwise have been blown to pieces where they lay. Throughout the whole of the operations his unfinding bravery won the admiration of all who saw him.

Temporary honorary Major Varaztad H. Kazanjian, Harvard Unit, attached No. 20 General Hospital, has been appointed a Companion of the Order of St. Michael and St. George in recognition of services rendered in connexion with military operations in France.

Scotland.

STATUS OF LECTURERS AND ASSISTANTS IN THE UNIVERSITY OF EDINBURGH.

At the meeting of Edinburgh University General Council on October 25th the recommendations of the conference of representatives of the general councils of the four Scottish universities, regarding the status of lecturers and assistants, were considered and referred to the University Court. The recommendations included the following as to the method of grading and salaries:

Grade III.—Assistants, who should be appointed annually, but not reappointed after a period of five years. Grade II.—Lecturers, whose appointments should be permanent after a service of not less than five years, including a probationary period of three years as lecturer. Service in other British universities may be taken into account in determining seniority and length of probationary period. Grade I.—Associate professors, who, on account of recognized eminence in teaching or research, should be appointed originally to this grade or promoted to it from Grade II. No appointment to this grade should be made solely on the ground of length of service. The recommendation in regard to salaries and pensions provided that, under Grade III, while the exact sum should be left to the University Court, the minimum salary should be £300, and there should be a definite understanding regarding time allowed for research. Under Grade II the salary should be £[illegible] rising after a period of five years, by annual increments of £[illegible] to £600, and under Grade I the salary should be £550, rising by annual increments of £50 to £750. Lecturers in Grades I and II should be placed on the same footing as regards pensions as professors, such time as must be spent as assistant or as probationary lecturer to be taken into account. Any rule that might at any future time be made regarding a retiring age for professors should apply also to permanent lecturers.

THE NEW REGISTER AND PARLIAMENTARY VOTING.

Under the Representation of the People Act, 1918, the Council Register of the University of Edinburgh by an Order in Council of March 4th, 1918, was revised up to April 15th last, and was published and came into force on October 1st. It contains 13,095 names, including those of 869 women who are entitled to vote in a parliamentary election, and 854 women, who, being under the age of thirty years, are ineligible to vote. The university voting is taken by means of voting papers, which, in terms of the Act, will be sent only to those electors who appear from the register to be resident within the United Kingdom or the Channel Islands. These have to be duly signed, attested, and posted to the registrar. Any elector who appears not to be so resident may request the registrar to send a voting paper to him to an address within the United Kingdom or the Channel Islands. Voters serving with the forces in areas on land abroad, other than France and Belgium, are entitled, instead of voting by post, to vote by proxy, and may apply to the registrar for a form of appointment of proxy.

Ireland.

COUNTY WEXFORD LOCAL MEDICAL COMMITTEE.

At a meeting of the County Wexford Local Medical Committee, held recently at Enniscorthy, with Dr. T. J. Kelly in the chair, Dr. W. W. Murphy, honorary secretary, stated that all the doctors in the county had signed the

pledge, approved at the delegates' meeting held last May in Dublin, undertaking not to apply for, or accept, the position of any doctor who had resigned or had ceased work for the purpose of its improvement. The following resolution was unanimously passed:

> That the medical officers of Enniscorthy, Wexford, and New Ross Unions make simultaneous applications to their respective boards of guardians to fix, in each case, a graded scale of salaries in accordance with the scale approved by the meeting of delegates held in Dublin on May 29th, 1918.

The meeting expressed its sympathy with Dr. T. J. Kelly on his arbitrary suspension by his board of guardians, and congratulated his colleagues in Enniscorthy on refusing the invitation of the guardians to discharge his duties, which action had led to his speedy reinstatement.

The scheme for the treatment of discharged disabled soldiers was considered, and though the capitation fee of 15s., to include the supply of drugs, etc., was considered inadequate for the proper treatment of such cases, it was resolved to give it a fair trial.

The valuable services rendered to the profession by the Committee were acknowledged, and the following members subscribed 10s. each towards its funds: Drs. M. Delany, M. K. O'Brien, F. Nolans, J. B. Ryan, W. G. Shorten, T. J. Kelly, G. A. Hickey, W. C. Lawler, P. Kinsella, S. V. O'Connor, J. O'Regan, B. Connolly, J. A. Pierse, P. D. Murphy, M. W. Kelly, C. R. Boyce, M. Walshe, W. W. Murphy. Dr. W. C. Lawler was unanimously appointed deputy representative for County Wexford on the Committee.

Correspondence.

THE FUNCTION OF THE CARDIAC VAGUS.

SIR,—If the question of the cardiac vagus were one of pure physiology I should no more venture to differ from Professor Bayliss than to argue with the Regius Professor of Greek about a passage in Euripides. But as it is also a matter of words, logic, mechanics, and energetics, H. O. Thomas, to say nothing of anyone else, may perhaps be acquitted of prejudice or ignorance if he found no convincing proof of inhibitory nerves. It was his very freedom from prejudice and his strong objective mind which led him to doubt the evidence. To assume that there is some quality or "influence" which weakens a mechanico-physical process such as the heart-beat must have seemed to him almost mystical. That cases are observed where "lessened action" takes place is undeniable, but that it occurs *directly* without any intelligible link, or some substituted antagonistic action, appears contradictory to the whole doctrine of energetics. Such direct weakening is without analogy save in "shock." I cannot agree with Professor Bayliss that to explain experimental cardiac inhibition by shock is to explain the simpler by the more complex. Shock may be roughly defined as a state of functional failure resulting from excessive and disintegrating excitation. Logically no definition can be given of inhibition which suggests the actual factors producing the effect.

When we consider the probable delicacy of such stimuli as result in normal vagal action, experimental excitation may well approximate in its results to shock. Physiologically the cardiac vagus may be stimulated by slight changes in blood pressure, and even by alterations in posture or breathing. Sir James Mackenzie states that the vagus is sensitive to very slight stimulation. In one case mere swallowing stimulated the vagus and produced heart-block. He attributes youthful vagal irregularity to acts of breathing. It is, therefore, easy to understand how such a sensitive mechanism may produce great, even grave, results under artificial stimulation. If physiology is to make secure that final passage to physics which Professor Bayliss, more than any one, has taught me to look for, some method should be found to reconcile the contradictions in cardiac and intestinal vagal action, and thereby enable us to classify inhibition under recognized mechanical law, or to do without the conception altogether. It may, perhaps, be discovered that some of the dissatisfaction with current theory can be obviated by means of a different terminology in which the "lessened action" of reciprocal innervation—that seen in the preliminary pause of intestinal action, and the peculiar phenomena observed in the heart—are not classed together under one word of very doubtful connotation.—I am, etc.,

London, N.W., Oct. 16th. MORLEY ROBERTS.

WHOOPING-COUGH AND LYMPHAEMIA.

SIR,—In my short note I intended to convey that amitotic division of lymphoid cells in the blood was not uncommon in whooping-cough. For years I have been familiar with this, but to a less extent, in the blood of typhoid and malaria—in short, in monocytosis. Although his words are "undergoing mitosis," I inferred from the context that Dr. Gordon Ward referred to the same thing and appeared to think it useful in the diagnosis of lymphaemia. I have never seen mitotic figures in lymphaemic blood, and amitotic division, we are agreed, is too common to be of any value.

In reply to his suggestion (p. 450), I may state that in my cases of whooping-cough (now quite well) there was no evidence of enlarged spleen or swollen glands. There was little bronchial catarrh or pyrexia, and the general health was little disturbed, so that enlarged tracheo-bronchial glands was an improbable cause of the lymphocytosis.

The comparatively frequent nuclear division suggested the action of a toxin auxetic to lymphoid tissue, in children particularly in the bone marrow. The number of immature lymphocytes, naked forms, perhaps corroborated this. The plasma cells are generally accepted as evidence of such tissue irritation or stimulation. It is remarkable that plasma cells are not oftener mentioned. As Leishman's stain shows them well enough, they must be overlooked every day in the examination of malarial blood. In the prevalent influenza-like epidemic there are often 1 to 2 per cent. about the fourth day or later—usually as big, deep blue cells with large, round, purplish nucleus. They accompany a monocytosis oftener than myelocytes accompany a leucocytosis.—I am, etc.,

London, W., Oct. 25th. ROBERT CRAIK.

THE FUTURE OF THE MEDICAL PROFESSION.

SIR,—Judging from the correspondence in the BRITISH MEDICAL JOURNAL concerning a State medical service, it does not seem to occur to the writers that the medical men now serving in the navy and army have any right to be consulted. Many of these men left their practices at the beginning of the war. These practices have been absorbed by those remaining at home, who naturally desire that this state of affairs should continue. They know that they would not obtain so much under a State service. But what about the men who have lost all owing to their patriotism and have nothing to return to? Some of us will have been away for five or six years.

I have served in several theatres of war and have met no officers who are not in favour of a State medical service. There is considerable bitterness felt by these for the members of the profession at home who are acting as mouthpieces for us and misleading men like Mr. Sidney Webb.—I am, etc.,

September 24th. LIEUT.-COLONEL R.A.M.C.(T.F.).

THE Municipal Waterworks Association has arranged to admit all municipal and local government authorities possessing water undertakings, and all water companies, to membership, and has changed its name to the British Waterworks Association. The chief objects of the association are to bring together representatives of water authorities for the consideration and discussion of questions affecting their general interests and to facilitate the acquisition of knowledge and information. It is proposed to create a joint industrial council for the waterworks undertakings industry, in accordance with the recommendations of the Whitley report. In consultation with the Provincial Water Companies' Association it has framed, at conferences convened by the Ministry of Labour, a constitution for the council. In accordance with the Whitley report it contemplates the establishment of three bodies representative both of the management and the workers—namely, a national council, districts councils for areas, and a consultative council for each separate undertaking.

Medico-Legal.

THE COVENTRY CASE.

Pratt and Others v. the British Medical Association and Others.

THIS case was mentioned to Mr. Justice McCardie on October 25th, on an application to enter formal judgement. A report of the learned judge's judgement appeared in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL for last week. The damages awarded to the various plaintiffs amounted in all to the sum of £3,810.

On an application that judgement be entered,

Mr. Schwabe, K.C. (who appeared with Sir Hugh Fraser), for the plaintiffs, asked that judgement might be entered for the amounts awarded. They were not quite agreed as to the figures, but his learned friend (Mr. Hollis Walker) and the Association had worked them out at £3,810. As to his Lordship's ruling that the defendants were to have the costs of issues on which they succeeded, this he understood to refer to certain of the alleged libels and slanders upon which the plaintiffs had failed. As to these, he desired to point out that since all the libels and slanders were relied on as part of the conspiracy, there ought to be no separate costs.

Mr. Justice McCardie: Do you say there was only one cause of action?

Mr. Schwabe: No. I allege a series of independent torts. I do not desire to abandon any cause of action.

Mr. Justice McCardie: In so far as any charge of libel or slander has failed the defendants are entitled to the costs of it. As I have already intimated, they are entitled to the costs of certain issues.

Mr. Schwabe then applied for the costs of the shorthand notes.

Mr. Justice McCardie: Was it agreed that they should be costs in the cause?

Mr. McCall: No, my lord. The plaintiffs were asked to agree, but refused to do so. The note was prepared and transcribed at our expense.

Mr. Schwabe said that he only asked for the costs of the shorthand note of the interlocutory proceedings and of so much of the transcript of the evidence as they had found it necessary to take up. They were bound to get a copy of some of the evidence, because it was referred to by counsel for the defendants.

Mr. Justice McCardie: You have lost nothing by the courtesy of your opponents in supplying you with a copy of the shorthand note. There is no precedent for this application. Although the case was long and complicated the evidence was not intricate.

Mr. Schwabe was then about to refer to the proposed injunction.

Mr. McCall: I admit that the plaintiffs are entitled to have their undertaking which was given before the Lord Chief Justice extended for any reasonable time after the declaration of peace, or until an appeal has been heard, whichever shall last happen.

Mr. Schwabe: The plaintiffs would prefer an injunction.

Mr. Justice McCardie: This case has given me great pain. I should prefer that the plaintiffs gain their object by an undertaking rather than by the stern formality of an injunction. If there is an appeal and the plaintiffs succeed and the Court of Appeal see fit, it may grant an injunction. I am very reluctant to submit these members of a great profession to an injunction. The whole future of the medical profession depends on the loyalty with which its members now serve the national interests.

At this point his Lordship intimated that as he had urgent business elsewhere the further hearing of the application would have to be adjourned.

The Services.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

THE annual general meeting was held on October 25th. Sir Alfred H. Keogh, G.C.B., G.C.V.O., was re-elected president; Lieut.-General T. H. J. C. Goodwin, C.B., D.G.A.M.S., was elected as the new vice-president; and Major W. F. Brook, Colonel Sir Thomas Crisp English, A.M.S., Colonel J. E. Gemmell, and Lieut.-Colonel S. F. Irvine were elected to the vacancies on the committee.

The report of the recommendation of the Committee for Grants up to September 30th, 1918, was adopted. Grants amounting to £396 had been made in the Benevolent Branch to the orphans of eleven officers, and in the Relief Branch amounting to £38 15s. to the widows and orphans of one corporal and five privates.

At a committee meeting held previously grants were made to orphans of seven officers amounting to £240, and to the widow and orphans of six members of the rank and file amounting to £234. These funds are for the education of the children of officers of the Auxiliary Royal Army Medical Corps who have lost their lives during the present war, or have been severely disabled by it; also for the widows and children of similar members of the rank and file.

Requests for help as well as subscriptions should be addressed to the Honorary Secretary, 11, Chandos Street, Cavendish Square, London, W.1.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on October 25th the degree of Bachelor of Surgery was conferred by proxy on C. H. Crawshaw.

Obituary.

R. BRUDENELL CARTER, F.R.C.S.,

Consulting Ophthalmic Surgeon to St. George's Hospital.

MR. BRUDENELL CARTER died at his residence at Clapham Common on October 2nd, a few weeks after completing his 90th year. He was an ophthalmic surgeon of distinction, but the influential position he held in London for many years was due to his long association with the *Times*. By his connexion with that paper he was in a position to place the views of the medical profession on subjects of the day before the general public, and the lucidity of his style always enabled him to do so with effect.

He was the son of Major Carter of the Royal Marines, and was born at Little Wittenham, in Berkshire, of which his grandfather was vicar. He received his medical education at the London Hospital, became M.R.C.S. in 1851, and L.S.A. in the following year. After practising in the neighbourhood of London for a couple of years he went out to the Crimea as staff surgeon in Turkey, and received the English and Turkish medals. There he made the acquaintance of Sir W. H. Russell, the famous correspondent of the *Times*, through whom he contributed a series of letters to that paper. After the war he again practised in the neighbourhood of London, and afterwards in Nottingham, where in 1859 he took part in the foundation of the Nottingham and Midland Eye Infirmary. In 1862 he went into partnership in Stroud, where he had a large share in the establishment of the Gloucestershire Eye Institution. He took the F.R.C.S. in 1864, and when his partnership terminated in 1868 settled in London as ophthalmic surgeon, renewed his connexion with the *Times*, and became a regular contributor to the *Lancet*. In the following year he became surgeon to the Royal Eye Hospital, Southwark, a post he retained until 1877. He was elected ophthalmic surgeon to St. George's Hospital in 1870, and on his retirement in 1893 was appointed consulting ophthalmic surgeon. He represented the Apothecaries' Society on the General Medical Council from 1887 to 1900. During this period he was mainly instrumental in introducing a change in the methods of the General Medical Council, which made it possible to deal in a suitable manner with comparatively trivial offences, by the expedient of postponing decision until the next session, making the interval a period of probation. The point cannot be better stated than in the following passage, which we are allowed to quote from a letter Carter addressed to the Editor of the *Lancet* in 1915: "When I joined the Council there were many cases in which there was no choice but to inflict the penalty of erasure from the *Register* for quite trivial offences, or else to condone them altogether, even if they came within definitions of 'infamous conduct' which the Council had already laid down. Cases of 'covering an unqualified practitioner,' for example, differed immensely as to degree of turpidity; and I more than once saw a boy, who had but just entered the profession, expelled from it for what was little more than foolish good-nature, and which only needed an admonition. . . . I may add that, since I succeeded in introducing the change, there has scarcely been a session in which it has not been brought into useful operation." Another piece of work of which Carter was justly proud was the part he played in the establishment of Hospital Sunday in London. When he joined the *Lancet* staff in 1868 Dr. James Wakley, the Editor, was anxious to start such a movement, and Carter wrote many articles on the subject which, by his influence, were quoted in the *Times*. Eventually the fund was established at

a meeting at the Mansion House, and Carter became a member of the first council. All this time he was busy with his pen, not only as a contributor to the *Times* and *Lancet*, but as an author of books and lectures on ophthalmology. He published a medical treatise on diseases of the eye in 1875, and in 1887 produced a manual on ophthalmic surgery, written jointly with his colleague, Dr. Adams Frost. In 1896 was published as a Parliamentary Paper his report on vision of children at London elementary schools—an important piece of pioneering work. His book, *Eyesight Good and Bad*, a treatise on the exercise and preservation of vision, was published in 1880. He pleaded that a large portion of the time of every ophthalmic consultant was occupied day after day in repeating to successive patients precepts and injunctions which ought to be universally known and understood. In his treatise he sought to state these precepts and injunctions and the reasons for them, and to make them plainly intelligible to those who are most concerned in their observance. Fluent in debate, Brudenell Carter loved to attend society meetings, and he was especially distinguished among the Fellows of the Medical Society of London not only for the active part which he took in the discussions, but also as orator (1874) and Lettsomian lecturer (1884); in the year 1886 he became its president.

Brudenell Carter was a Knight of Justice and Honorary Commander of the Order of St. John of Jerusalem. He was twice married and had four sons.

GEORGE SELBY BROCK, M.B., CH.B.EDIN.,
CAPTAIN I.M.S.

News has been received of the sudden death from influenza on October 12th at Rawal Pindi of Captain G. Selby Brock of the Indian Medical Service. The only son of Dr. George Brock of Rome, he was born in the Orange Free State thirty-two years ago, and educated at Uppingham School and at the Universities of St. Andrews and Edinburgh, from which last he graduated in 1910. He joined the Indian Medical Service one year later, and at the outbreak of the war he came to France with the first Indian contingent and served in Flanders, thus earning the 1914 star. In the following year he returned to India to regimental duty at various stations—for the last two years at Kohat on the North-Western Frontier. Thence he was transferred in June last to Rawal Pindi on his appointment as adjutant of the newly instituted School of Instruction for Temporary I.M.S. Officers which he had helped to organize there.

Captain Brock was a fine athlete, having at Uppingham captained the school fifteen, and while at Edinburgh won the inter-university hurdles championship. He was also a good linguist, speaking French, German, and Italian, and shortly before his death he was engaged on, and had nearly completed, the compilation of a manual on the Pushtu language and Afridi dialect. His personal qualities made him a general favourite, and his loss will be much felt in the service, especially at the new School of Instruction, to the success of which his attractive personality, his good influence with the young Indian officers, and his enthusiastic and excellent work were greatly contributing. He leaves a widow and two children.

The death is announced of Dr. F. F. Wesbrook, President of the University of British Columbia, formerly professor of pathology in the University of Manitoba, and professor of public health and bacteriology in the University of Minnesota.

La Riforma Medica has just published a special number dedicated to the memory of its founder, Professor Gaetano Rummo, who died on May 11th, 1917. The first number of the periodical was published on January 1st, 1885; at first it appeared daily, but very soon it became a weekly periodical. Rummo was a man of abounding energy and held in succession the chair of medicine in Siena, Pisa, Palermo, and Naples. He took a special interest in neurology, but the long list of his scientific contributions shows that he was a general physician of wide scope. It may be interesting to add at this time that Rummo served for two periods as deputy in the Italian Parliament, where he represented his native town of Benevento.

Medical News.

The arrangements for the autumn lectures before the Royal College of Physicians of London are as follows: Dr. F. H. Teale, honorary medical officer in charge of the vaccine department of University College Hospital, London, gives the Horace Dobell lecture on bacterial toxins on Tuesday, November 5th. The Bradshaw lecture by Colonel W. Aldren Turner, C.B., M.D., on neuroses and psychoses of war, will be given on November 7th. On November 12th and 14th Dr. Arnold Chaplin will give his FitzPatrick lectures on medicine in England during the reign of George III. The first course, which he gave last year, was reported in our columns at the time. The lectures will be given each day at 5 o'clock.

A report on the administration of oxygen in irritant gas poisoning has been prepared by the Chemical Warfare Medical Committee. It contains a discussion of the indications for oxygen and a description of the best method of administering it, which will be of general and permanent interest. We regret that pressure on our space compels us to postpone a notice of this important report.

Sir Alfred Keogh, G.C.B., has been elected an honorary Fellow of the Royal Society of Medicine, and the diploma will be presented to him at a special general meeting to be held on Wednesday, November 13th, at 4.30.

In Poplar, on the recommendation of Dr. F. W. Alexander, M.O.H., the council's electrolytic disinfecting fluid is supplied free for use as a mouth-wash and gargle as a preventive of influenza. It is also to be sniffed up the nose. It is used in the strength of two or three teaspoonfuls to a tumbler of cold water.

At a meeting of the Medico-Legal Society on November 14th the president, Dr. F. J. Smith, will deliver an address on pensions and their allotment, to be followed by a discussion. The meeting will be held at the rooms of the Medical Society of London at 8.30 p.m.

The National Association for the Prevention of Infant Mortality has been informed by the Controller of Coal Mines that a claim could certainly be submitted for an additional allowance under the Household Fuel and Lighting Order, on the ground of illness in the case of childbirth, and would be allowed for a reasonable period thereafter. The quantity of fuel granted must depend on the circumstances of each case.

At a meeting of the Medical Society of London on October 28th papers on rheumatoid arthritis were read by Dr. T. S. P. Strangeways, who dealt with the morbid anatomy and histology, and by Dr. A. P. Beddard, who discussed the treatment of this condition. A discussion followed. We hope to print Dr. Strangeways's paper and to report the discussion in an early issue of the Journal.

The College of Nursing is enabled, through the Nation's Fund for Nurses, to offer to its members three studentships, tenable at King's College for Women, London, to qualify trained nurses, after a year's course of study, for the posts of sister-tutor, or instructress of nursing methods in the training schools.

At the meeting of the London Insurance Committee on October 24th it was agreed by 33 votes to 4, after a prolonged debate, to protest emphatically against the intention of the Government to incorporate into the Ministry of Health the functions of the Local Government Board relating to the administration of the non-medical side of the Poor Law. The General Purposes Subcommittee reported that in its judgement the new Ministry of Health would be condemned from the outset in the eyes of practically all that part of the population which was most concerned if all the great new health activities which it should inaugurate were associated with Poor Law odium.

The council of the Royal Sanitary Institute recently adopted a resolution in which, after stating the great satisfaction with which it noted the progress made and the valuable work done during the past fifty years for the public health, it expressed the opinion that, for the effective continuance and development of the work, all matters relating to public health should, as far as possible, be co-ordinated in one department as a Ministry of Health. It concluded by urging that the matter was one of pressing public importance which should receive the early attention of the Government.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

INQUIRIES have been received for copies of the pamphlet, *The Voluntary Hospitals and the Proposed Ministry of Health Bill*, prepared for the British Hospitals Association by Mr. J. Courtney Buchanan (London: The Scientific Press. Price 6d.). We understand that the second edition is almost exhausted, and that the pamphlet will not be reprinted unless orders are received early.

THE COVENTRY CASE.

DR. A. HEWSTON HOLMES (Meriden, nr. Coventry) writes: Having received several communications, I beg to state that I had no connexion of any kind whatever with the late Coventry Dispensary action. Evidently my name has been mistaken for that of one of the plaintiffs in that lawsuit.

THE MEDICAL SERVICE R.N.

THE opinion expressed by a medical officer R.N. in this column last week does not seem to be generally entertained by his brother officers. We understand that the good effect of a similar change made some years ago in the case of engineer officers has been very obvious. In commenting upon the change we said that further problems remain for solution, and, in fact, many matters will have to be remedied before the medical branch R.N. proves a really attractive service. At one time many men of good ability were attracted to the service by the opportunities it afforded to see the world, and perhaps to study some branch of natural history. The German menace has for years made it necessary to keep a large part of the fleet in home waters, and life in the service under these conditions does not offer a young medical man the attractions of past times. There is another matter which calls for the attention of the Admiralty: it is the present position of the sick berth staff, corresponding to N.C.O.'s and men of the R.A.M.C. These men, who are specially trained, whose services are indispensable, and who run the same risks as any others on board, should be put on a better footing as regards pay and promotion; the conditions should be made similar to those of the lower deck ratings of the engineer branch.

V.A.D. MEDICAL OFFICERS.

S. writes: As a V.A.D. medical officer of over four years' duration I can corroborate "V.A.D. Medical Officer's" letter in the JOURNAL of October 12th. One should receive some badge or acknowledgement as a slight return for so much voluntary work as is entailed by giving one's services freely and gratis over such a long period. The War Office would not even grant me a pass when I went for a much needed holiday. I am also M.O. of a Volunteer regiment, which has entailed much further work and out-of-pocket expenses. Personally I am "fed up" with our unjust voluntary system, which is so unequally borne by members of the medical profession.

PROPHYLACTIC INFLUENZA VACCINE.

DR. B. HENRY SHAW (Stafford) writes with reference to the omission of *Micrococcus catarrhalis* from the vaccine recommended by the War Office conference (p. 470) to state that in the cases he has examined in Stafford he found heavy infection with that organism as well as *B. influenzae*. He suggests that the streptococcal infection is possibly secondary, and that it is quite likely that *M. catarrhalis* initiates it.

SCARLATINIFORM RASH IN INFLUENZA.

DR. ROBERT KIRKLAND (Cheltenham) writes: Dr. Reginald Pollard (October 26th, p. 465) says he was much puzzled by six cases in the summer epidemic that developed a general rash at first typical of scarlet fever. He ascribed the rash to these cases to salicin or some impurity contained therein. Now in the present epidemic I have had four cases with a rash indistinguishable at first from scarlet fever. But the march of events was not the same. There was no initial vomiting; the temperature, though high, was not accompanied by a quick pulse—for example, a temperature of 105° had a pulse of 92—and the tongue, though coated, never lost the early strawberry appearance nor the later raspberry look. In none of these cases was salicin or any salicylate given. In another case, however, which I saw in consultation with a friend, there was the same rash, but here salicin had been administered, and my friend was inclined to attribute the rash to this drug, as Dr. Pollard did in his cases. I feel sure these scarlatiniform rashes must be due to some streptococcal toxin in the mixed infection.

THE TREATMENT OF PNEUMONIA.

DR. HOPE GRANT (Sheerness), writing to express the opinion that Dr. E. W. Martland has done wisely in again drawing the attention of the profession to the "iodine" treatment of pneumonia (October 26th, p. 464), continues: I have had gratifying results with it lately, and find, as he does, that cough and expectoration soon disappear, and the duration of the attack is shortened. I have not tried it in lobar pneumonia, but do not know of any sufficient reason for not doing so. I am doubtful, however, whether it has any effect in the very acute post-influenzal pneumonias of the present epidemic. I find it best to give smaller doses of the iodide and creosote (2½ grains and 1 minim respectively) to begin with, as patients complain of the nauseous taste of the mixture.

DR. F. J. SADLER (Barnsley) writes: My experience of the past ten years entirely confirms that of Dr. E. W. Martland, but I have long substituted guaiacol 1½ mins. for the creosote 2½ mins., and now use collosol iodine 10 to 15 mins. instead of the potassium iodide 5 grains. If the causative organism can be determined correctly, sensitized vaccine sometimes works miracles.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

The following letter (enclosing a draft for £20) has been received by the honorary treasurer to the Fund:

2, Beach Street, Clovelly, Sydney, Australia,
September 6th, 1918.

Honorary Treasurer, Belgian Doctors' Relief Fund.

Dear Sir,—I am enclosing a cheque for £20 (or rather draft) as a small subscription to the above Fund.

I have returned after three years of war, and know something of what these brave Belgian people must be living through.

Yours sincerely,
Roy Winn, M.B., Ch.M.

Subscriptions to the Second Appeal.

The following subscriptions have been received up to Monday last, October 28th:

	£	s.	d.
Dr. Alfred Cox (monthly)	1	1	0
Sir A. Pearce Gould (monthly)	5	0	0
Dr. Cameron Kidd (for Mrs. Stuart Todd) ...	1	0	0
Dr. F. M. Neild	5	0	0
North of England Branch B.M.A. (per Dr. J. Don, Hon. Sec.)—			
Dr. H. A. Brand ...	5	5	0
Dr. S. V. Tinsley ...	1	1	0
Dr. J. W. Smith ...	5	5	0
Dr. A. Smith, jun. ...	5	5	0
Dr. C. J. Henderson ...	1	1	0
Dr. Harris-Liston ...	1	1	0
Dr. Connon	0	10	0
Dr. L. Walker	1	1	0
Dr. G. A. Atkinson ...	5	5	0
Dr. H. H. Aitchison ...	5	5	0
Dr. M. A. Wardle ...	1	1	0
Dr. E. F. Pratt	5	5	0
Dr. R. A. Morris ...	1	1	0
Dr. H. R. Kendal ...	1	1	0
Dr. J. G. D. Cort ...	1	0	0

	£	s.	d.
Archdeacon Henderson	1	1	0
Dr. R. Forsyth	3	3	0
Dr. W. Mussellwhite ...	2	0	0
Prof. David Drummond	10	10	0
Dr. H. Kershaw... ...	2	2	0
Dr. W. W. Stainthorpe	2	2	0
Dr. W. Petter	1	1	0
Dr. C. G. Maclagan ...	3	3	0
Dr. J. Hedley	3	3	0
Dr. H. A Fielden ...	5	0	0
Dr. N. F. Rowstrom ...	1	1	0
American Red Cross Commission for Belgium (monthly) ...	200	0	0
Dr. J. C. M. Given ...	1	1	0
Hon. Medical Staff of Bolton Infirmary (per Dr. Mothersole) ...	25	0	0
Dr. Charlotte E. Warner	1	0	0
Dr. Roy Winn (Australia)	20	0	0
Dr. T. M. Tibbetts ...	1	1	0
Dr. C. H. Brangwin (China)	5	0	0

Subscriptions to the Fund should be sent to the Treasurer, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W.1, and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.